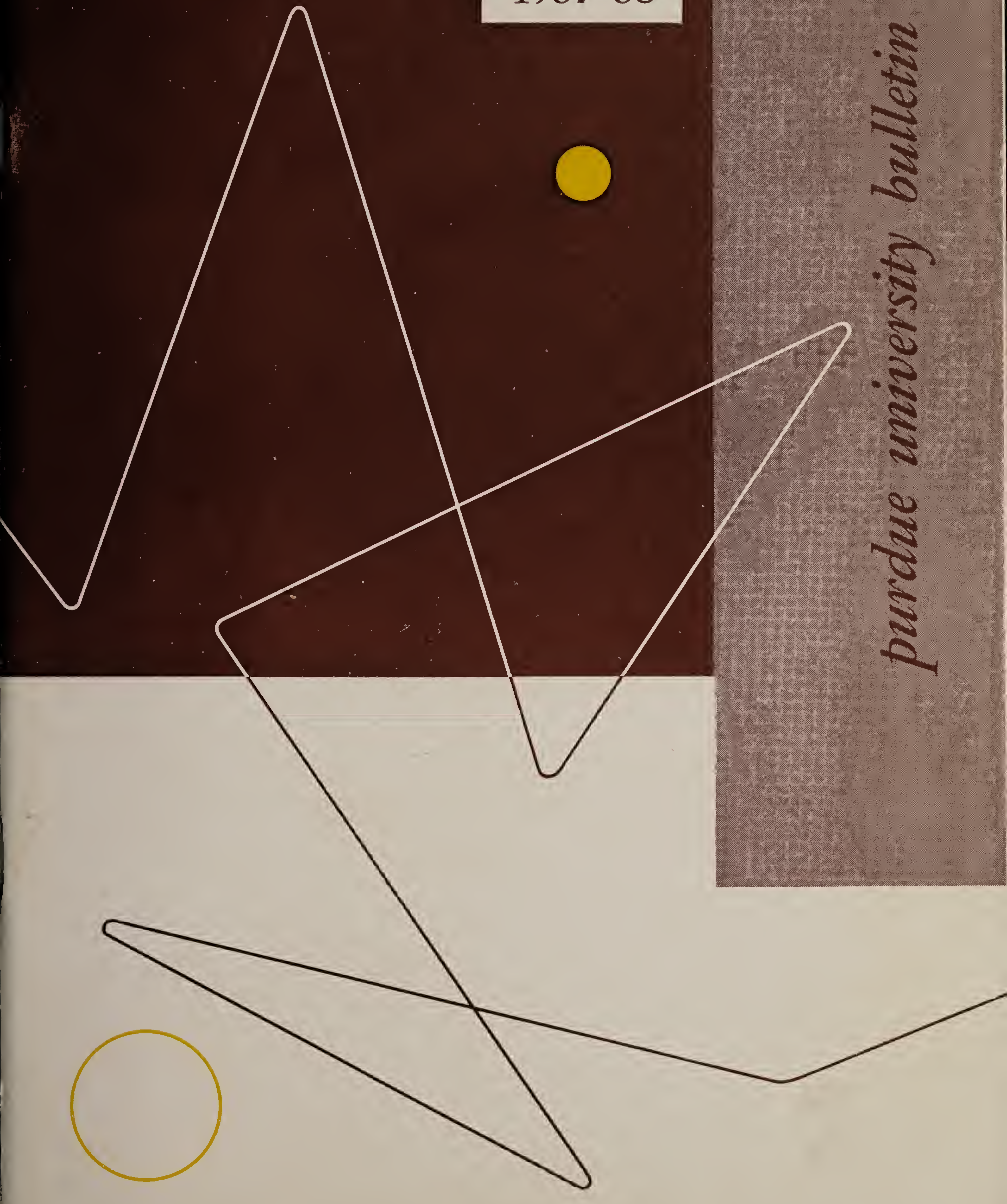
OFF-CAMPUS CATALOG

1957-58

purdue university bulletin



UNIVERSITY CALENDAR

1957

SEPTEMBER

S	M	T	W	T	F	S
1	2	3	4	5	6	7
8	9	10	11	12	13	14
15	16	17	18	19	20	21
22	23	24	25	26	27	28
29	30					

OCTOBER

S	M	T	W	T	F	S
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27	28	29	30	31		

NOVEMBER

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DECEMBER

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29	30	31				

1958

JANUARY

S	M	T	W	T	F	S
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5	6	7	8	9	10	11
12	13	14	15	16	17	18
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26	27	28	29	30	31	

FEBRUARY

S	M	T	W	T	F	S
						1
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MARCH

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16	17	18	19	20	21	22
23	24	25	26	27	28	29
30	31					

APRIL

S	M	T	W	T	F	S
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MAY

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18	19	20	21	22	23	24
25	26	27	28	29	30	31

JUNE

S	M	T	W	T	F	S
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15	16	17	18	19	20	21
22	23	24	25	26	27	28
29	30					

JULY

S	M	T	W	T	F	S
		1	2	3	4	5
6	7	8	9	10	11	12
13	14	15	16	17	18	19
20	21	22	23	24	25	26
27	28	29	30	31		

AUGUST

S	M	T	W	T	F	S
					1	2
3	4	5	6	7	8	9
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24	25	26	27	28	29	30
31						

First Semester

June 12-July 26
Advance registration for new undergraduate students

September 11-14
Registration for new undergraduate students who did not report during the advance registration period.

September 15-18
Orientation for all new students

September 19
Classes begin

November 27, 6 p.m.
Thanksgiving vacation begins

December 2, 7 a.m.
Classes resume

December 21, noon
Christmas vacation begins

January 6, 7 a.m.
Classes resume

January 25, noon
Classes end

Second Semester

January 27-29
Orientation and registration of new students

January 30
Classes begin

April 2, 6 p.m.
Easter vacation begins

April 10, 7 a.m.
Classes resume

May 28, 6 p.m.
Classes end

June 1
Commencement

Summer Session

June 6-7
Registration of new students

June 9
Classes begin

July 4
Independence Day Holiday

August 2, noon
Classes end

The extension activities of Purdue University operate within the Division of Technical Extension. Information regarding the extension offerings of the University may be obtained by writing to the Dean, Division of Technical Extension, Engineering Administration Building, Purdue University, Lafayette, Indiana.

PURDUE UNIVERSITY BULLETIN
VOL. 57 January 21, 1957 No. 9
Entered at Lafayette, Indiana as second-class matter, under Act of Congress of August 24, 1912. Issued at Purdue University four times in January, five times in February, three times in March, twice in April, and once in May, June, July, August, September, October, November and December.

Division of Technical Extension

OFF-CAMPUS PROGRAM

Announcements for the Year 1957-58

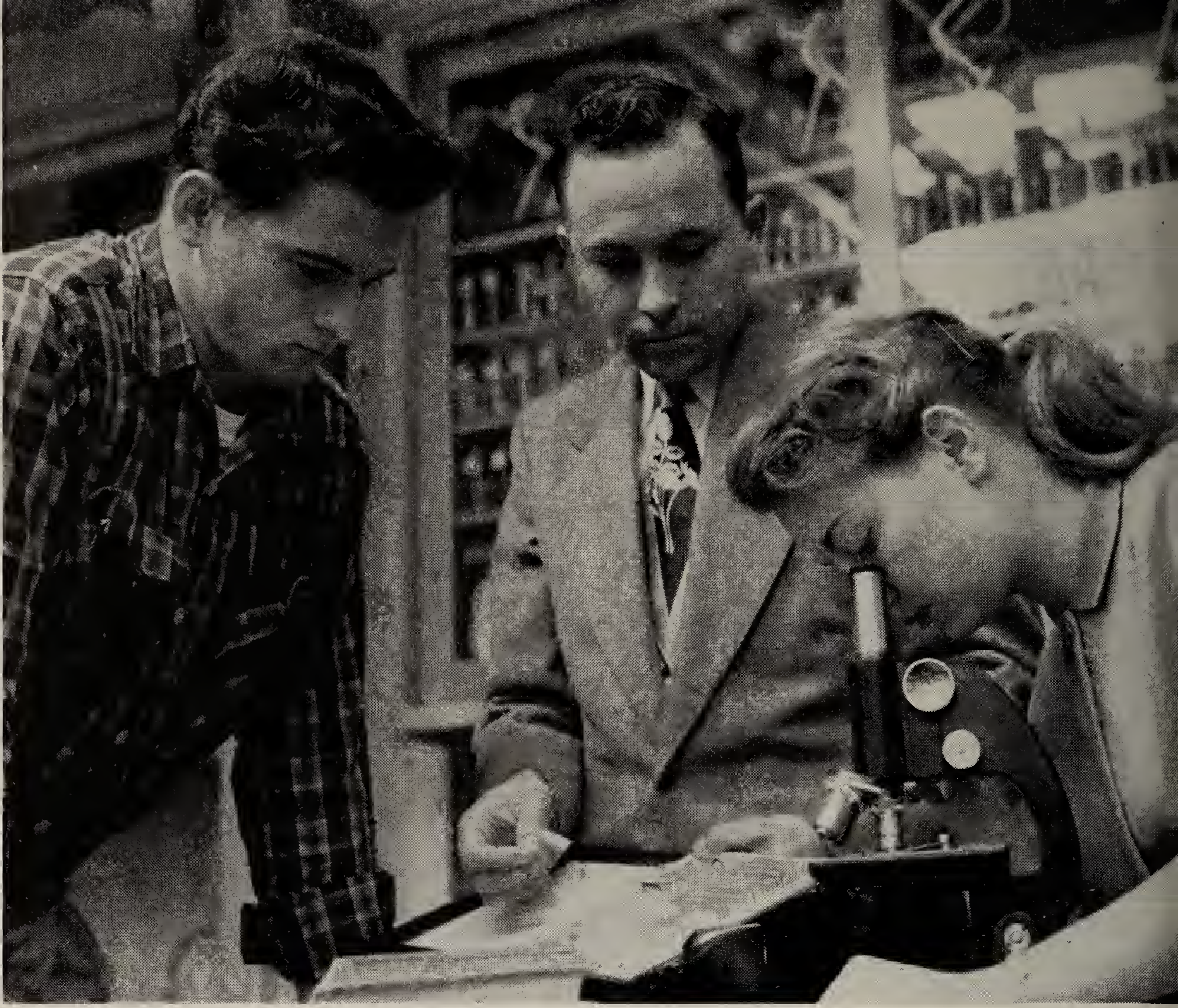
PURDUE UNIVERSITY

Calumet
Fort Wayne
Indianapolis
Michigan City
Columbus

Eighty-third Year

LAFAYETTE, INDIANA

PUBLISHED BY THE UNIVERSITY



Modern and well equipped basic science laboratories allow for the teaching of advanced as well as introductory courses.

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PURDUE UNIVERSITY

OFF-CAMPUS PROGRAM

Purdue University, a land-grant institution, extends its programs of study in science, technology, and agriculture through University Centers, which have been established in order to better serve the needs of the people of the state. The Off-Campus University Centers provide an opportunity for students, in many cases, to live at home and take regular University work. In addition, this state-wide program provides credit and non-credit courses, correspondence instruction, short courses, demonstrations, lectures, conferences, publications, and other formal and informal enterprises for the purpose of making available to the people of the state the educational resources of the University.

Degree Credit Courses. Degree credit courses carry residence credit (with certain limitations on graduate courses) and are identical in quality and content with courses given on the Lafayette campus. All instructors, full- or part-time, are approved by the heads of the various academic schools and departments. Courses are planned and supervised by the schools and departments in the same manner as on campus. Enrollment in a Center is enrollment in Purdue.

Non-Credit Courses. The University will offer non-credit classes, of an adult nature, which are within the scope of its teaching facilities. Any interested group may request assistance in the development of a course to meet its particular needs. A member of the extension staff will assist with the planning and operation of such a class.

Freshman Work. Freshman work acceptable toward a degree in the Schools of Engineering; Science, Education, and Humanities; Pharmacy; Agriculture; and Home Economics is offered through the off-campus program. Students may enroll on the Lafayette campus after completion of their first year, or may continue their studies at the Center if the required courses are available. Students are cautioned, however, to consult their school advisors or center director concerning the amount of work they can pursue profitably off-campus.

The courses recommended in the freshman programs of studies, which follow (and are so indicated by italic type), constitute a full college load and will require about 23 hours in class each week. After having completed a full freshman year's work, students may transfer to the campus as sophomores.

Special Services for Industry

The Division of Technical Extension is organized to assist business and industries in the organization, development, and operation of educational and training programs for work force, technical staff, supervisory, and management personnel. The conduct of surveys, analyses of personnel or educational needs, the organization of formal class instruction, and the development of specific programs of study can be carried out either as University service or as a cooperative activity with the company. Instruction may be in regular courses for which degree credit is earned on either the undergraduate or graduate levels, or it may be in special non-credit, informal classes. All such services may be limited to the extent that facilities and staff are available. Charges for these services will include the fees assessed for student enrollment in classes and for other services rendered.

At the present time such services are being offered in various locations in the state and include programs for

Allison Division of General Motors Corporation
Farnsworth Electronics Corporation
General Electric Company
Indiana Bell Telephone Company
Inland Steel Company
Magnavox Company
Northern Indiana Public Service Company
Radio Corporation of America
Youngstown Sheet and Tube Company

Requirements for Admission

All inquiries regarding admission should be addressed to the Director of Admissions, Purdue University, Lafayette, Ind.

If high school seniors prepare a first letter of inquiry to the Admissions Office they should state:

(a) the amount of school training completed
(b) their plans for further education, indicating field of specialization
(c) the approximate date they wish to enter Purdue
(d) a request for information concerning admissions
(e) a request for an application form

When a prospective Purdue student receives his application form from the admissions office or from his high school principal, he should fill it out according to instructions on the form and then submit it to his principal. The principal will complete the application form and forward it to the Director of Admissions at Purdue.

High school seniors should file their application forms at the start of their final semester. This enables the University to notify the applicant of tentative action before he graduates. It is not advantageous to file sooner than this, however, since the Admissions Office depends primarily on the high school record.

ENTRANCE REQUIREMENTS

For admission as a regular student in one of the degree programs of study, applicants must satisfy prescribed requirements. Of seven main areas of specialization at Purdue (agriculture, engineering, home economics, science, pharmacy, physical education for men, and industrial education) only physical education dispenses with units of algebra and plane geometry. All require a unit of laboratory science, three units of English, a unit of social studies, a total of not less than 15 units, and finally high school graduation. In addition the engineering schools require ½ unit of advanced algebra and another ½ unit of trigonometry.

Applicants who intend to earn a degree in pharmacy must qualify for admission to the School of Science, Education, and Humanities for their freshman year of pre-pharmacy. The high school record should include at least two units of science with laboratory work, preferably biology, chemistry, and physics, in that order.

AREA	High-School Graduation	1 Unit Algebra	½ Unit Advanced Algebra	1 Unit Plane Geometry	½ Unit Trigonometry	1 Unit Laboratory Science	3 Units English	1 Unit Social Studies	Total of Not Less Than 15 Units
Agriculture	x	x		x		x	x	x	x
Engineering	x	x	x	x	x	x	x	x	x
Home Economics	x	x		x		x	x	x	x
Phys. Educ. (Men)	x					x	x	x	x
Science, Education, and Humanities	x	x		x		x	x	x	x

Admission with Deficiencies. No student is admitted with deficiencies unless he ranks in the upper third of his graduating class. Such an admission is considered to be conditional pending a satisfactory record at the end of the first year.

A student is not admitted to the Schools of Engineering unless he has completed both one unit of algebra and one unit of plane geometry. Students who meet the entrance requirements except for trigonometry will be considered to have removed this deficiency on passing Mathematics 161 or 152. A trigonometry deficiency may also be removed by completing a non-credit correspondence study course or a credit course in trigonometry (MA 112) which is offered regularly at most of the University Centers. A deficiency in advanced algebra may be removed by a non-credit correspondence study course or by completion of Mathematics 161 or 152.

TEMPORARY STUDENTS

Persons who desire to avail themselves of the instruction offered in any of the departments of the University without undertaking one of the plans of study and without becoming a candidate for a degree may be admitted as a temporary student. Such students must present satisfactory evidence that they are prepared to take advantageously the work desired.

TRANSFER STUDENTS

An applicant transferring from another college or university must fulfill the following requirements:

1) Submit an application for admission on the prescribed form through the principal of the high school from which he was graduated.

2) Forward an official transcript of work done in institutions previously attended. A separate transcript together with a marked catalog must be sent directly from each institution whether or not credit is requested. If the credentials are not sufficiently definite, a personal consultation with the applicant may be necessary.

3) A formal report will be obtained by the Director of Admissions himself from the dean of men, dean of women, or an authorized official in the school last attended.

4) An average of at least one grade higher than the passing grade for all courses previously taken at a recognized college or university is required.

Orientation and Placement Examinations. New students are required to take the following orientation tests: English, physical science and mathematics. A placement test in drawing may be given for those requesting an evaluation of previous experience. These tests are not entrance examinations.

Where facilities and enrollment in a University Center permit, students may be classified according to their abilities and training. The score on the English placement tests will determine whether a new student is assigned to English 101 or 103. The score on the mathematics placement test will determine whether the new student in engineering or in science (major in mathematics, chemistry, or physics only) will be assigned to Mathematics 151 or 161. Additional information about placement in English, mathematics, and engineering drawing may be found under the department listing of the courses.

Grades and Honors

Each student will receive a grade for each course in which he is enrolled at the close of a session. The student shall be responsible for the completion of all required work by the time of the last scheduled meeting in the course unless his assignment to the course has been properly cancelled. The grade shall indicate the student's achievement with respect to the objectives of the course.

The system is as follows:

For credit courses:

A—highest passing grade.
B
C
D—lowest passing grade; passing minimal objectives of the course.
E—conditional failure; failure to achieve minimal objectives, but only to such limited extent that credit can be obtained by examination or otherwise without repeating the entire course. This grade represents failure in the course unless removed during the following semester.
F—failure to achieve minimal objectives of the course. The student must repeat the course satisfactorily in order to establish credit in it.

For zero credit courses (including thesis research but not including laboratory portions of courses in which, for purposes of scheduling, separate course designations and separate class cards are used for the laboratory sections):

S—satisfactory; meets course objectives.
U—unsatisfactory; does not meet course objectives.

For incomplete work, either credit or non-credit:

O—incomplete; no grade; a temporary record of work which was interrupted by unavoidable absence or other causes beyond a student's control, and which work was passing at the time it was interrupted. An instructor may require the student to secure the recommendation of the Dean of Men or the Dean of Women that the circumstances warrant a grade of Incomplete. On the record a grade of O will be equivalent to a W unless the work is completed during the following semester.

Directed grades. The Registrar is directed to record the following grades and symbols under special circumstances.

W—withdrew; a record of the fact that a student was enrolled in a course and withdrew or cancelled the course after the last date for late registration and adding courses.

WF—withdrew failing; a record of course cancellation after the last date for cancelling a course without grade, at which time, according to a statement from the instructor, the student was not passing in his work. This grade counts in all respects as a failing grade.

A grade of WF may be directed by the Dean of Men, the Dean of Women, or the Committee on Scholastic Delinquency and Readmissions when a student is dropped from a course for serious scholastic delinquency.

V—visitor; a designation in lieu of any other grade for any student enrolled in a course as a visitor without credit.

Scholarship Index. For every student a scholarship index will be computed at the end of each semester.

Distinguished Students. Of the undergraduate students enrolled in curricula leading to degrees, and carrying at least fourteen semester hours of assigned work, those whose scholarship index at the end of any regular semester is equal to or greater than 5.50 are designated as distinguished students of that semester.

Scholastic Probation. Those students who are classified as *freshmen as of September 1956,* and thereafter, are subject to the following new probation regulations during their entire undergraduate program of study: to continue in good standing the stated minimum index must be made each semester as freshman—3.2; sophomore—3.5; junior and senior—3.7. All other students will continue to be subject to the former probation regulation and must make *above* a 3.00 index. Failure to make the required index at the end of a given semester will cause the student to be placed on probation for his next semester. If he is already on probation and fails to make the required index, he will be dropped from the University at the end of that semester. The student may petition the Committee on Readmissions, and if he is permitted to register again, he will do so on probation.

Special students and graduate students are exempt from probation regulations. Probation is concerned only with the regular semesters and not with the summer session, summer camps, and intensive courses.

For the purpose of this faculty action a grade of incomplete is considered as passing, and a grade of condition, failure, or unsatisfactory is considered as failing. The action as of the end of the semester must stand even though a condition grade may be removed later.

Termination. A student in Engineering whose cumulative index is below 3.35 at the end of his second or fourth semester will have his status as a student terminated. Effective September 1, 1957, the student in Engineering whose cumulative index is below 3.50 at the end of his second semester or at anytime thereafter will have his status terminated. Effective September 1, 1959, a student in Engineering whose cumulative index is less than 3.75 at the end of any semester for which he has been classified as 5 or higher will have his status terminated. Effective May 1, 1960, a student in Engineering who passes twenty or more credit hours in excess of the total number required for a baccalaureate degree and yet has not met all requirements for that degree will have his status terminated.

An unclassified student has specific conditions prescribed in connection with his registration that govern his continuance as a student in the University. When he fails to satisfy these special requirements the Supervisor of the Unclassified Students will advise the Registrar and the status of the individual as a student will be terminated.

A student whose status is terminated will not be permitted to register for any future session on the Lafayette campus or in a University Center unless he is reinstated by the Director of Admissions on the basis of a special recommendation by the head of his school or an approved change of curriculum request.

Fees

Course Fees. Fees and deposits for each course are listed with the course descriptions in this catalog. Fees are paid to a representative of the University at the time of registration.

Veterans may submit in place of cash as payment for their fees a properly endorsed Veterans Administration form such as a Certificate of Eligibility and Entitlement (Public Law 346) or a Letter of Authority (Public Law 16). Whenever defects exist in such authorizations, and in the absence of authorization, the veteran is required to pay cash for fees and supplies under regulations applying to all students. Veterans qualifying for the training allotment of money provided under Public Law 550 also pay cash for fees and supplies.

Breakage Fees. Course fees include the cost of normal breakage and wear and tear on equipment. An additional charge will be levied against individuals for excessive waste, loss, or breakage as may occur. Such special charges must be paid before course credit will be given.

Fees for Special Examinations. A fee of $10 is charged persons not regularly enrolled for at least 12 hours of work, for advanced-standing examinations or placement tests. A fee of $2 is charged students who are regularly enrolled for twelve hours or more of work for advanced-standing examinations, removal of condition, or placement tests. There are no fees for placement tests taken at regularly scheduled times or for the removal of incomplete grades.

Refunds and Withdrawals. Course fees will be refunded under any one of the following conditions:

1. Withdrawal during first and second weeks of semester, 80 per cent refund.
2. Withdrawal during third and fourth weeks of semester, 60 per cent refund.
3. Withdrawal during fifth and sixth weeks of semester, 40 per cent refund.
4. Withdrawal after sixth week of semester, no refund.

Students who register for a course and do not attend class will be withdrawn as of the first day of class and entitled to a refund of eighty per cent of the course fees paid.

Deposits on equipment are subject to regular service and breakage charges.

Refunds are not transferable from one registration period to another or from one student to another.

To be eligible for a refund the student must notify the extension office and apply for a refund at the Center where he is registered at the time of his withdrawal.

Correspondence Study

Training is also given by correspondence study for high-school students and recent high-school graduates lacking certain subjects required for admission to the University or needing to refresh their knowledge of other courses in preparation for university work. Courses currently available are:

Elementary Algebra I. This course covers the first semester of high-school algebra.

Elementary Algebra II. Continuation of the first semester's work.

Advanced Algebra. Begins with a review of the topics studied in a basic course in algebra. In addition, the course includes linear equations, fractional and literal equations, systems of linear equations, radicals, exponents, quadratic equations, and systems of equations involving quadratics.

Plane Geometry I. This course covers the amount of geometry usually taught in the first semester.

Plane Geometry II. Continuation of the first semester's work.

Plane Trigonometry. This course follows the same general plan as that taken on the campus by freshman engineers. The first part includes the use of trigonometric functions in solving triangles with either the natural values of the functions or by means of logarithms. The second part covers analytical trigonometry, including a study of identities, equation, radian measure, and inverse functions.

For information on correspondence study courses write to the address given on the inside front cover.

Military Training

Students enrolled in the University Centers are excused from Basic Military Training required of all male students attending on the Lafayette campus during their freshman and sophomore years, but are required to substitute academic courses of equal credit value. Veterans with one year of military service are exempt from Basic Military Training and are not required to make academic substitution.

Key to Abbreviations in Programs of Study

Approved plans of study for freshmen enrolled in the various schools and options and for sophomores enrolled in the physical education for men option are given on the following pages. Courses recommended by the schools and departments are so indicated by *italic type*. The type of course as it applies to the student's plan of study for the program in which he is enrolled is indicated by the following abbreviations:

R—Required course.
Rs—Required substitute, which replaces a required course listed in the general catalog.
el—Elective.
op—Optional; may be substituted in place of required course.

FRESHMAN PLANS OF STUDY

ENGINEERING

Undergraduate instruction in the Schools of Aeronautical Engineering, Chemical and Metallurgical Engineering, Civil Engineering, Engineering Sciences, Electrical Engineering, and Mechanical Engineering leads to the degree of Bachelor of Science. In order to give the student sufficient time to adjust himself and to choose the branch of engineering for which he is best adapted, the following program of study during the freshman year is common for the curricula in all engineering schools. Engineering students planning to transfer to the campus with sophomore standing should have completed the 38 semester hours listed in the recommended program below. Only those students with adequate background training will be expected to accomplish this in two semesters. Students with inadequate preparation, particularly in mathematics and chemistry, may require an additional semester or summer session to attain sophomore standing.

First Semester

Course No.	Course Title	Credit	Fees	Type*
MA 161	*Mathematics for Engineers and Scientists I*	5	$60	R
ENG 101	*English Composition*	3	36	R
or				
SPE 114	*Principles of Speech*	3	36	R
CHM 115	*General Chemistry*	4	58	R
CE 118	*Engineering Graphics*	3	47	R
ENG 100	*Freshman Engineering Lectures*	1	12	R
	Non-Technical Elective	3	36	el
	Total	19		
PEM 112	Physical Activities	1	18	el
SPE 111†	Public Speaking	2	24	Rs
ENG 185‡	Developmental Reading	⅔	30	el

Second Semester

Course No.	Course Title	Credit	Fees	Type*
MA 162	*Mathematics for Engineers and Scientists II*	5	$60	R
ENG 101	*English Composition*	3	36	R
or				
SPE 114	*Principles of Speech*	3	36	R
CHM 116	*General Chemistry*	4	58	R
PHY 152	*Mechanics*	4	57	R
	Non-Technical Elective	3	36	el
	Total	19		
PEM 112	Physical Activities	1	18	el
SPE 112†	Public Speaking	2	24	Rs
ENG 185‡	Developmental Reading	⅔	30	el

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* Key to abbreviations appears on page 11.
† SPE 111-112 may be substituted for SPE 114 requirement.
‡ Strongly recommended for all engineering students but not required for graduation.

SCIENCE, EDUCATION, AND HUMANITIES

The School of Science, Education, and Humanities provides both introductory and advanced courses in the various fields of science as well as other subjects essential to a broad education, such as economics, English, government, history, modern languages, psychology, sociology and speech. The student may fit himself for practical work in biology, chemistry, mathematics, physics, education, English, speech, history, economics, or modern languages, or for further training in a dental, medical, or law school. The instruction also prepares for teaching. Approved plans of study for the various options follow:

CHEMISTRY, PHYSICS, AND MATHEMATICS OPTIONS

First Semester

Course No.	Course Title	Credit	Fees	Type[*]
MA 161	*Mathematics for Engineers and Scientists I*	5	$60	R
ENG 101	*English Composition*	3	36	R
ENG 185	*Developmental Reading*	⅔	30	R
SOC 100	*Introductory Sociology*	3	36	R
CHM 115[†]	*General Chemistry*	4	58	R
or				
ZOOL 160[‡]	*Biology of Animals*	4	58	R
	Total	15⅔		
PEM 112	Physical Activities	1	18	el
PEW 100	Physical Education	1	12	R
SPE 111[§]	Public Speaking	2	24	Rs
HIST 205	U. S. in World Affairs	3	36	Rs

Second Semester

Course No.	Course Title	Credit	Fees	Type
MA 162	*Mathematics for Engineers and Scientists II*	5	$60	R
GVMT 301	*Elements of Democracy*	3	36	Rs
SPE 114	*Principles of Speech*	3	36	Rs
CHM 116[†]	*General Chemistry*	4	58	R
or				
PHY 152[‡]	*Mechanics*	4	57	R
	Total	15		
PEM 112	Physical Activities	1	18	el
PEW 100	Physical Education	1	12	R
SPE 112[§]	Public Speaking	2	24	Rs
PSY 120	Elementary Psychology	3	36	el
FOR 103	Conservation	2 or 3	24-36	el

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[*] Key to abbreviations appears on page 11.
[†] For students majoring in chemistry.
[‡] For students majoring in mathematics or physics.
[§] Credit will not be given for both SPE 111-112 and SPE 114.

SCIENCE, EDUCATION, AND HUMANITIES

BIOLOGICAL SCIENCES, PRE-PHARMACY, PRE-MEDICAL AND PRE-DENTAL OPTIONS

First Semester

Course No.	Course Title	Credit	Fees	Type[*]
ZOOL 160	*Biology of Animals*	4	$58	R
CHM 111[†]	*General Chemistry*	3	46	R
MA 121[‡]	*General College Mathematics I*	3	36	R
ENG 101	*English Composition*	3	36	R
ENG 185	*Developmental Reading*	⅔	30	R
FREN 101[§]				
or	*First Course in French*	3	36	R
GERM 101[§]	*First Course in Standard German*	3	36	R
	Total	16⅔		
SPE 111[¶]	Public Speaking	2	24	Rs
PEM 112	Physical Activities	1	18	el
PEW 100	Physical Education	1	12	R
HIST 205	U. S. in World Affairs	3	36	Rs
SOC 100	Introductory Sociology	3	36	el

Second Semester

Course No.	Course Title	Credit	Fees	Type[*]
PLSC 140	*Introduction to Plant Life*	4	$58	R
CHM 112[†]	*General Chemistry*	3	46	R
MA 122[‡]	*General College Mathematics II*	3	36	R
SPE 114	*Principles of Speech*	3	36	Rs
FREN 102[§]	*Second Course in French*	3	36	R
or				
GERM 102[§]	*Second Course in Standard German*	3	36	R
	Total	16		
SPE 112[¶]	Public Speaking	2	24	Rs
PEM 112	Physical Activities	1	18	el
PEW 100	Physical Education	1	12	R
GVMT 301	Elements of Democracy	3	36	Rs

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[*] Key to abbreviations appears on page 11.

[†] Pre-pharmacy students should take CHM 109 and 110 which includes qualitative analysis, if available.

[‡] In those centers where MA 121-122 are not offered, MA 111-112, 161 or 152 may be substituted for MA 121. MA 162 may be substituted for MA 122.

[§] Those planning to major in one of the biological sciences or to enter medical or dental school should choose GERM 101 and 102. Substitute GVMT 301, HIST 205, or SOC 100 where modern language is not offered. Students in the Pre-Pharmacy Option may substitute GVMT 301, HIST 205, or SOC 100 for modern language.

[¶] Credit will not be given for both SPE 111-112 and SPE 114.

SCIENCE, EDUCATION, AND HUMANITIES

INDUSTRIAL EDUCATION OPTION

The four-year curriculum in Industrial Education which leads to the degree of Bachelor of Science in Industrial Education is designed to prepare the student to qualify in one of the following fields: (1) vocational industrial teaching, (2) industrial arts, (3) school building service, (4) industrial training. Completion of this curriculum also fulfills the professional training requirements specified by the Indiana State Teacher Training and Licensing Commission. Individuals with qualified industrial experience may request an evaluation of it for credit purposes.

In order to achieve any of these objectives, each student is required to complete a basic curriculum which includes the subjects listed below. Provision is then made for majoring in one of the subject matter fields.

First Semester

Course No.	Course Title	Credit	Fees	Type*
MA 111†	*Algebra*	3	$36	R
ENG 101	*English Composition*	3	36	R
GVMT 301	*Elements of Democracy*	3	36	Rs
CHM 111	*General Chemistry*	3	46	R
SPE 114	*Principles of Speech*	3	36	R
	Total	15		
SPE 111‡	Public Speaking	2	24	Rs
ECON 210	Principles of Economics	3	36	R

Second Semester

Course No.	Course Title	Credit	Fees	Type*
MA 112†	*Trigonometry*	3	$36	R
SOC 100	*Introductory Sociology*	3	36	R
CHM 112	*General Chemistry*	3	46	R
PSY 120	*Elementary Psychology*	3	36	R
ENG 202	*English Composition*	3	36	R
	Total	15		
SPE 112‡	Public Speaking	2	24	Rs
ENG 238	Introduction to Fiction	3	36	el
HIST 205	U. S. in World Affairs	3	36	el
ECON 210	Principles of Economics	3	36	R
PSY 230	Educational Psychology	3	36	R
SPE 325	The Business and Professional Interview	3	36	R

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* Key to abbreviations appears on page 11.

† If MA 111-112 are not offered, MA 121-122 may be substituted.

‡ Credit will not be given for both SPE 111-112 and SPE 114.

SCIENCE, EDUCATION, AND HUMANITIES

SOCIAL SCIENCE, ENGLISH, PSYCHOLOGY AND OTHER OPTIONS

First Semester

Course No.	Course Title	Credit	Fees	Type*
ZOOL 160	*Biology of Animals*	4	$58	Rs
GVMT 301	*Elements of Democracy*	3	36	R
ENG 101	*English Composition*	3	36	R
ENG 185	*Developmental Reading*	⅔	30	R
MA 121†	*General College Mathematics I*	3	36	R
FREN 101	*First Course in French*	3	36	R
or				
GERM 101	*First Course in Standard German*	3	36	R
	Total	16⅔		
SPE 111‡	Public Speaking	2	24	Rs
PEM 112	Physical Activities	1	18	el
PEW 100	Physical Education	1	12	R

Second Semester

PSY 120§	*Elementary Psychology*	3	36	R
SOC 100	*Introductory Sociology*	3	36	R
SPE 114	*Principles of Speech*	3	36	Rs
MA 122†	*General College Mathematics II*	3	36	R
FREN 102	*Second Course in French*	3	36	R
or				
GERM 102	*Second Course in Standard German*	3	36	R
	Total	15		
SPE 112‡	Public Speaking	2	24	Rs
PEM 112	Physical Activities	1	18	el
PEW 100	Physical Education	1	12	R
HIST 205	U. S. in World Affairs	3	36	Rs

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* Key to abbreviations appears on page 11.

† In those centers where MA 121-122 are not offered, MA 111-112, 161 or 152 may be substituted for MA 121. MA 162 may be substituted for MA 122.

‡ Credit will not be given for both SPE 111-112 and SPE 114.

§ PLSC 140 may be substituted for PSY 120.

SCIENCE, EDUCATION, AND HUMANITIES

PHYSICAL EDUCATION FOR MEN

PHYSICAL EDUCATION, COACHING AND TEACHING OPTION

FRESHMAN YEAR

First Semester

Course No.	Course Title	Credit	Fees	Type*
ZOOL 160	Biology of Animals	4	$58	Rs
ENG 101	English Composition	3	36	R
SOC 100	Introductory Sociology	3	36	R
PEM 101	Orientation	1	12	R
PEM 112	Physical Activities	1	18	Rs
PEM 103	P. E. Curricular Activities	3	36	R
ENG 185	Developmental Reading	⅔	30	R
	Total	15⅔		

Second Semester

PLSC 140	Introduction to Plant Life	4	$58	Rs
SPE 114	Principles of Speech	3	36	R
PEM 102	History of Physical Education	1	12	R
PEM 112	Physical Activities	1	18	Rs
PEM 104	P. E. Curricular Activities	3	36	R
PSY 120	Elementary Psychology	3	36	R
	Total	15		

SOPHOMORE YEAR

First Semester

ZOOL 260	Anatomy	3	$46	R
ENG 238	Introduction to Fiction	3	36	R
PSY 230	Educational Psychology	3	36	R
PEM 203	Principles of Intramural Activities	3	36	R
CHM 111	General Chemistry	3	46	Rs
SPE 325	The Business and Professional Interview	3	36	el
PEM 112	Physical Activities	1	18	Rs
	Total	19		

Second Semester

ZOOL 360	Physiology	3	36	R
ENG 202	English Composition	3	36	R
PEM 204	Physical Education Rhythmic Activities	3	36	R
CHM 112	General Chemistry	3	46	Rs
	Electives	6		el
PEM 112	Physical Activities	1	18	Rs
	Total	19		

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* Key to abbreviations appears on page 11.

AGRICULTURE

The School of Agriculture trains students in many types of agricultural life work, including not only farming, but related educational and industrial activities. Programs of study are offered in Forestry and Conservation. Twelve departments in the School of Agriculture offer optional programs preparing students for jobs in research, teaching and extension, as well as various related commercial enterprises. Instructional work is based on fundamental training in biology, chemistry, and physics together with courses in history, economics, English, psychology, and other similar courses.

First Semester

Course No.	Course Title	Credit	Fees	Type*
ENG 101	*English Composition*	3	$36	R
CHM 111	*General Chemistry*	3	46	R
ZOOL 160	*Biology of Animals*	4	58	R
AGEC 100	*Introduction to Agricultural Economics*	3	36	el
POUL 101	*Poultry Production*	3	37	el
	Total	16		
MA 111†	Algebra	3	36	el
CHM 115	General Chemistry	4	58	op
HIST 205	U. S. in World Affairs	3	36	el
PEM 112	Physical Activities	1	18	el

Second Semester

Course No.	Course Title	Credit	Fees	Type*
SPE 114	*Principles of Speech*	3	$36	R
CHM 112	*General Chemistry*	3	46	R
GVMT 301	*Elements of Democracy*	3	36	el
PLSC 140	*Introduction to Plant Life*	4	58	R
FOR 103	*Conservation*	2 or 3	24-36	el
ENT 100	*Introductory Entomology*	3	37	el
	Total	18 or 19		
ENG 238	Introduction to Fiction	3	36	el
MA 112†	Trigonometry	3	36	el
CHM 116	General Chemistry	4	58	op
PSY 120	Elementary Psychology	3	36	el
PEM 112	Physical Activities	1	18	el

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* Key to abbreviations appears on page 11.

† If MA 111-112 are not offered, MA 121-122 may be substituted.

HOME ECONOMICS

The plan of study in Home Economics is designed to prepare young men and women for professional work in the various areas of the field and at the same time to provide a broad general education which prepares the student to meet the needs for home and community living.

Areas of concentration include child development (nursery-kindergarten), clothing and textiles, art and design, dietetics and nutrition, food management, foods in business, food research, home economics extension, housing, and vocational home economics teaching.

Students interested in preparation for work in the fields mentioned above should enroll in the curriculum listed below.

First Semester

Course No.	Course Title	Credit	Fees	Type*
ENG 101	*English Composition*	3	$36	R
CHM 111	*General Chemistry*	3	46	R
MA 111†	*Algebra*	3	36	Rs
SOC 100	*Introductory Sociology*	3	36	R
C&T 102	*Clothing I*	4	47	R
	Total	16		
ZOOL 160	Biology of Animals	4	58	el
SPE 111‡	Public Speaking	2	24	el
HIST 205	U. S. in World Affairs	3	36	el

Second Semester

Course No.	Course Title	Credit	Fees	Type*
ENG 238	*Introduction to Fiction*	3	$36	op
SPE 114	*Public Speaking*	3	36	Rs
CHM 112	*General Chemistry*	3	46	R
GVMT 301	*Elements of Democracy*	3	36	el
PSY 120	*Elementary Psychology*	3	36	R
	Total	15		
MA 112†	Trigonometry	3	36	el
PLSC 140	Introduction to Plant Life	4	58	el
SPE 112‡	Public Speaking	2	24	el

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* Key to abbreviations appears on page 11.

† If MA 111-112 are not offered, MA 121-122 may be substituted.

‡ Credit will not be given for both SPE 111-112 and SPE 114.

DESCRIPTION OF COURSES

Courses numbered 1 to 499 are primarily for undergraduate students. Courses numbered 500 to 599 are for undergraduates (usually junior and senior) and graduate students. Courses numbered 600 and above are primarily for graduate students.

For each course the first line of the description should be interpreted as follows: first the official number of the course; second, its special title; third, the number of class, laboratory and credit hours; and fourth, the fee for the course. For example, the following line:

AGRON 105 CROP PRODUCTION: Class 2, Lab. 2, cr. 3 $36 indicates that the course Agronomy 105, Crop Production, meets two hours each week for lecture, recitation, or class discussion, has a laboratory period of two hours each week, yields three semester hours of credit and costs $36.

SCHOOL OF AGRICULTURE

AGRICULTURAL ECONOMICS

Professor Hardin in charge

100. INTRODUCTION TO AGRICULTURAL ECONOMICS. Class 3, cr. 3 $36

Farm financial records, analysis of the farm business; factors affecting farm profits, agricultural geography; types of farming; and current problems in agricultural economics.

AGRONOMY

Professor Peterson in charge

105. CROP PRODUCTION. Class 2, Lab. 2, cr. 3 $36

Fundamental principles in crop production, distribution, rotations, soil relations; grain and forage crops, adaptation, characteristics, varieties, harvesting, storage, and marketing.

255. SOIL MANAGEMENT. Class 2, Lab. 2, cr. 3 $36

Must be preceded by Chem. 101, 111, or 117.

Soil management and fertility. Designed for students taking only one course in soils.

ANIMAL HUSBANDRY

Professor Harper in charge

101. ANIMAL AGRICULTURE. Class 3, cr. 3 $36

The importance of livestock in the field of agriculture, and the place of meats and other animal products in the human diet.

111. TYPES AND MARKET CLASSES OF MEAT ANIMALS. Class 1, Lab. 4, cr. 3 $36

The selection of feeder and breeding stock suitable for the production of desirable market beef cattle, hogs, and lambs. The marketing, slaughtering, and processing of meat animals.

261. ANIMAL NUTRITION. Class 3, cr. 3 $36

Must be preceded by Chem. 101-102, or 111-112, or 117-118.

Fundamental principles of animal nutrition.

DAIRY

Professor Gregory in charge

101. ELEMENTS OF DAIRY PRODUCTION. Class 2, Lab. 2, cr. 3 $36

A survey of the dairy production field. The dairy breeds and the raising, managing, selecting, and feeding of dairy cattle. The composition and food value of milk and milk products. Sanitary milk production.

105. ELEMENTS OF DAIRY MANUFACTURES. Class 2, Lab. 2, cr. 3 $36

A survey of the dairy manufactures field. The fundamentals of processing market milk and manufacturing butter, cheese, concentrated milks, ice cream and powdered milks. Applications of science to the manufacture of dairy products.

ENTOMOLOGY

Professor Davis in charge

100. INTRODUCTORY ENTOMOLOGY. Class 2, Lab. 2, cr. 3 $37

The structure, biology, and classification of insects and the principles of insect control.

FORESTRY

Professor Martell in charge

103. CONSERVATION. Class 2, cr. 2, or Class 2, Lab. 2, cr. 3 $24 or $36

Development and use of natural resources, with special emphasis on renewable natural resources. Lectures. Directed program of supplemental reading for additional credit.

HORTICULTURE

Professor Ellis in charge

318. GENERAL HORTICULTURE. Class 3, cr. 3 $36

Of special interest to students who want one 3-credit course in the various fields of horticulture. Not to be taken by students who have credit in Hort. 207 or 308.

POULTRY SCIENCE

Professor Martin in charge

101. POULTRY SCIENCE INDUSTRY. Class 2, Lab. 2, cr. 3 $37

The poultry industry in the nation and on the farm. Breeds, breeding, incubation, brooding, feeding, marketing, disease control. Laboratory involving judging, culling, preparation for market, and study of equipment.

FRESHMAN ENGINEERING

Professor Spalding in charge

100. FRESHMAN ENGINEERING LECTURES. Class 1, cr. 1 $12

An introduction to the engineering profession.

SCHOOL OF CHEMICAL AND METALLURGICAL ENGINEERING

Professor Comings in charge

CHEMICAL ENGINEERING

201. CHEMICAL ENGINEERING CALCULATIONS AND ELEMENTARY THERMODYNAMICS. Class 2, Lab. 2, cr. 3 $36

Must be preceded by Chem. 101-102 or equivalent and accompanied or preceded by Math. 261 and Phys. 251.

Chemical Engineering calculations with emphasis on material balances as applied to industrial processes; thermodynamic concepts of heat, work, system, and process; the first law of thermodynamics. Several lectures by staff members and guests are included to acquaint the student with various aspects of the chemical engineering profession.

202. CHEMICAL ENGINEERING CALCULATIONS AND ELEMENTARY THERMODYNAMICS. Class 3, cr. 3 or Class 2, Lab. 3, cr. 3 $36 or $41

Must be preceded by Ch.E. 201.

Conservation of energy applied to batch and flow processes; properties of gases. Measurements Laboratory.

METALLURGICAL ENGINEERING

201. METALLURGICAL CALCULATIONS. Class 3, cr. 3 $36

Must be preceded by Chem. 115 and 116 or equivalent, and accompanied or preceded by Math 261 and Phys. 251.

Heat and material balances associated with metallurgical processes and lecture discussion of professional problems.

345. ELEMENTARY METALLURGY. Class 3, cr. 3 $36

Must be preceded by Chem. 116, Phys. 2.

SCHOOL OF CIVIL ENGINEERING

Professor Woods in charge

110. DRAFTING FUNDAMENTALS. Class 1, Lab. 6, cr. 3 $47

A basic course in drawing; orthographic projection, pictorial sketching, print reading, and reproduction of drawings. Problems designed to require practical reasoning and develop good techniques.

111. ADVANCED DRAFTING. Class 1, Lab. 6, cr. 3 $47

Continuation of C.E. 110. Preparation of assembly and detail drawings including fasteners, limit dimensioning, and shop notes. Intersections and developments with sheet metal pattern applications. Symbols and construction details used in architectural drafting.

113. SLIDE RULES AND GRAPHS. Lab. 2, cr. 1 $13

Must be preceded or accompanied by Math. 112 or 151.

Principles and use of the slide rule for division, multiplication. trigonometry, powers and roots. Properties and types of coordinate graphs for scientific and engineering purposes; calculation and plotting graphs: uniform, log, semi-log and others.

118. ENGINEERING GRAPHICS. Class 1, Lab. 6, cr. 3 $47

Must be preceded or accompanied by Math. 152 or 161.

Graphical methods used in engineering design, layout and calculation. Multiview and pictorial drawing and sketching of technical objects; basic dimensioning practice; conventional representation.

218. DESCRIPTIVE GEOMETRY. Class 1, Lab. 3, cr. 2 $30
Must be preceded by C.E. 118 and preceded or accompanied by Math. 261.

Relations of points, lines, and planes and their graphical and algebraic representations; graphical solutions, and associations with algebraic solutions of theoretical and practical problems.

262. RAILROADS. Class 1, Lab. 3, cr. 2 $32
Must be preceded by C.E. 104.

Maintenance; problems in frogs, switches, yards, transition spiral; quantities, cost data, monthly and final estimates.

268. HIGHWAY CONSTRUCTION. Class 1, Lab. 3, cr. 2 $30
Must be preceded by C.E. 104.

Location, earthwork, drainage, design, contract procedure, and maintenance. Particular emphasis on low-cost roads.

269. HIGHWAY CONSTRUCTION. Class 2, cr. 2 $24
Must be preceded by E.S. 312.

Materials, design, construction, and maintenance of bituminous concrete and block types of roads and streets; subgrade stabilization; administration and finance; comparative values of road-surface types.

292. PHYSICAL GEOLOGY. Class 2, Lab. 3, cr. 3 $40

Geologic processes and the development of land forms. Laboratory covers the study of minerals and rocks, the interpretation of topographic and geologic maps, and field trips.

293. HISTORICAL GEOLOGY. Class 2, cr. 2 $24
Must be preceded by Geol. 292 or C.E. 292 or equivalent.

The history of the earth, including its origin, architecture, and the development of its structures. Study of the rock record and the evolution of life. Several field trips are taken during the semester.

317. PRODUCTION ILLUSTRATION.
Lab. 6, or Class 1, Lab. 6, cr. 2 or 3 $35 or $47
Must be preceded by C.E. 218.

To give the student a good knowledge of and some experience in the graphical construction and some rendering techniques necessary to produce accurate pictorial drawings suitable for catalogs, production planning and design analysis.

502. LAND SURVEYING. Class 2, cr. 2 $24
Must be preceded by C.E. 102 or 201.

United States government survey of public lands. Laws of land surveying. Plats, descriptions, area computations. County planning, zoning, highways.

SCHOOL OF ELECTRICAL ENGINEERING

Professor Johnson in charge

461. ILLUMINATION ENGINEERING. Class 3, cr. 3 $36
Must be preceded by E.E. 301.

Spectro radiometric and luminosity functions, illumination entities and units, source characteristics, illumination measurements and calculations, lighting applications, elementary designs, and costs.

551. ADVANCED ELECTRONIC CIRCUITS. Class 3, cr. 3 $45
Engineering Extension course for Fort Wayne graduate program.

583. AUTOMATIC CONTROL MECHANISMS. Class 3, cr. 3 $45
Must be preceded by E.E. 352 and 421; or 316.
Engineering extension course for credit.

Fundamental physical and mathematical principles of servo and other automatic control components.

DIVISION OF ENGINEERING SCIENCES

Professor Chenea in charge

204. STATICS AND KINETICS. Class 5, cr. 5 $60

Must be preceded by Phys. 230 or equivalent and preceded or accompanied by Math. 242.

Statics: forces, vectors, moments, equilibrium, friction, centers of gravity and moments of inertia.

Kinetics: force, mass, acceleration, velocity, inertia, work, energy, power, impulse and momentum.

312 INTRODUCTION TO MECHANICS OF MATERIALS. Class 4, cr. 4 $48

Must be preceded by E.S. 211 and preceded or accompanied by C.E. 270.

Concepts of stress and strain; effect of loads; analysis of plane stress and strain theories; deflection of beams; columns; stress in thin-walled pressure vessels; bending combined with axial loads; stress concentrations.

SCHOOL OF INDUSTRIAL ENGINEERING AND MANAGEMENT

Professors Amrine and Weiler in charge

365. ORGANIZATION FOR PRODUCTION. Class 3, cr. 3 $36

Must be preceded by Math. 242.

Basic course in industrial engineering, introducing the functions of plant layout, production planning and control, quality control, cost control, motion and time study, industrial organization, and employee relations.

477. WORK METHODS AND MEASUREMENT. Class 3, cr. 3 $36

Must be preceded by I.E. 365 and preceded by or accompanied by I.E. 345.

Work analysis; principles and techniques of motion study; nature of human work; design of work methods; work measurement; ratio-delay; predetermined time systems.

575. MOTION AND TIME STUDY. Class 3, cr. 3 $45

Students must have at least senior standing. Engineering students should take I.E. 477.

Motion study; work simplification; principles of motion economy; human factors affecting job methods; time study; human and economic aspects of motion and time study.

SCHOOL OF MECHANICAL ENGINEERING

Professor Solberg in charge

230. ELEMENTARY HEAT POWER. Class 3, cr. 3 $36

Must be preceded by Chem. 116, Math. 241 or 261, M.E. 280, and Phys. 240 or 251.

Matter and energy, fuels and combustion, internal combustion engines, steam generation, turbines, heat exchangers, fans and pumps.

300. THERMODYNAMICS. Class 3, cr. 3 $36

Must be preceded by M.E. 230, Math. 242 and M.E. 280.

First law, properties of pure substances, second law, entropy, gas and gas-vapor mixtures.

500. THERMODYNAMICS. Class 3, cr. 3 $45

Must be preceded by M.E. 301.

A more extended treatment of the fundamentals of thermodynamics, including equilibrium, combustion, and real gases.

SCHOOL OF HOME ECONOMICS

ART AND DESIGN

Professor Calkin in charge

355. ART APPRECIATION. Class 3, cr. 3 $36

Open to juniors and seniors only.

CHILD DEVELOPMENT AND FAMILY LIFE

Professor Murphy in charge

209. FAMILY HEALTH. Class 2, Lab. 1, cr. 2 (Lab. for 5 weeks only) $26

Lectures and demonstrations on the fundamental principles of nursing in the home, disease prevention, and maternal and infant care.

350. MARRIAGE AND FAMILY RELATIONSHIPS. Class 3, cr. 3 $36

Designed to provide further understanding of family relationships for those unmarried, those contemplating marriage, those married, and prospective counselors of all of them. A functional approach to the interpersonal relationships of courtship, marriage, and family life. Open to both men and women.

CLOTHING AND TEXTILES

Professor Howe in charge

102. CLOTHING I. Class 2, Lab. 4, cr. 4 $47

Aesthetic and economic factors in the selection of clothing designs, fabrics, and colors for individuals; experience in the use of commercial patterns and a variety of construction techniques; textile study in relation to consumer buying and care.

EQUIPMENT AND FAMILY HOUSING

Professor Johnston in charge

226. HOUSING THE FAMILY. Class 3, cr. 3 $36

Must be preceded by A.D. 113.

Planning and choice of homes and furnishings.

FOODS AND NUTRITION

Professor Vail in charge

313. FAMILY FOOD PURCHASING. Class 2, Lab. 3, cr. 3 $41

Must be preceded by F.N. 205.

Varieties, standards, grades, brands, qualities of food products; factors governing costs, food legislation.

HOME MANAGEMENT

Professor Fitzsimmons in charge

303. OPERATING THE HOUSEHOLD. Class 3, cr. 3 $36

For students not majoring in home economics.

Elements of marketing and budgeting; choice and care of equipment and other furnishings; laundry and cleaning methods; motion and time saving at daily tasks; food management. Staff.

INSTITUTION MANAGEMENT

440. INSTITUTION FOOD PURCHASING. Class 2, Lab. 2, cr. 3 $35

Must be preceded by I.M. 338 and 338L or I.M. 335.

Methods of buying, bases of selection and storage of food.

536. SCHOOL LUNCHROOM MANAGEMENT. Class 3, cr. 3 $45

For graduates in Home Economics who are managing lunchrooms and who have had courses in foods and nutrition approved by the department.

Survey of school lunchroom problems; menu planning; purchase, preparation, and service of food; records; management; equipment.

SCHOOL OF PHARMACY

Dean Jenkins in charge

Pre-Pharmacy Year. Students who expect to complete work for a degree in the School of Pharmacy should take a year of pre-pharmacy courses (School of Science, Education, and Humanities, Pre-Pharmacy Option) followed by a three-year program of professional courses in the School of Pharmacy.

Students taking the pre-pharmacy year in colleges other than the School of Science, Education, and Humanities, Purdue University, should submit 35 or more semester hours of credit, including the following:

General Inorganic Chemistry and Qualitative Analysis	8 hours
Mathematics (Algebra and Trigonometry)	6 hours
English Composition	3 hours
Speech or Rhetoric	3 hours
Botany	4 hours
Zoology	4 hours
Approved Electives	7 or 8 hours
Total	35 to 36 hours

Approved electives include:

Modern Language	6 hours
Principles of Economics	3 or 6 hours
Introductory Sociology	3 hours
Elementary Psychology	3 hours
Drafting	2 or 4 hours
American Government	3 or 6 hours
Mathematics (Analytic Geometry and Calculus)	6 hours
English Literature or Composition	3 hours
Developmental Reading	⅔ hours
Physical Education	1 or 2 hours

If an applicant has the required number of hours of academic credit but does not have credit for all prescribed subjects, he may be admitted with eight semester hours of deficiency, which must be made up before graduation.

The attention of applicants is directed to the following admission and residence provisions:

1. Students who have completed the pre-pharmacy year at Purdue or elsewhere cannot be assured of admission to the School of Pharmacy. When the number of qualified applicants exceeds the available facilities, preference will be given to residents of Indiana, and selection of students will be made on the basis of qualifications as determined from the transcript of record, examinations, and personal interviews.

2. Students will enter the professional program of study in the School of Pharmacy only at the beginning of the fall semester of each academic year. Application for admission should be made on or before April 1 preceding the planned entrance date.

3. Three years' residence in an accredited school or college of pharmacy is required for qualification for the degree of Bachelor of Science in Pharmacy.

SCHOOL OF SCIENCE, EDUCATION, AND HUMANITIES

BIOLOGICAL SCIENCES

Professor Karling in charge

GENERAL BIOLOGY

101. GENERAL BIOLOGY. Class 2, Lab. 2, cr. 3 $38

Fundamental facts underlying the biological sciences; study of a series of type forms with emphasis on laboratory exercises.

102. GENERAL BIOLOGY. Class 2, Lab. 2, cr. 3 $38

Continuation of Biol. 101.

107. HUMAN BIOLOGY Class 3, cr. 3 $36

The human structure and physiology. Not for pre-medical students and majors in biological sciences. Satisfies the biology requirement for the B.S. degree of the School of Science, Education, and Humanities.

110. APPLIED INDUSTRIAL MICROBIOLOGY.
Class 2, cr. 2, or Class 2, Lab. 2, cr. 3 $24 or $38

(Offered only by the Division of Technical Extension.)

Applications of microorganisms to industry and their relations to infection and immunity, public health, microbiological assay of foods, and preparation of antibiotics.

BACTERIOLOGY

210. GENERAL MICROBIOLOGY. Class 2, Lab. 3, cr. 3 $46

Microorganisms: their isolation, cultivation, identification, and importance to man.

*211. BACTERIOLOGY. Class 2, Lab. 4, cr. 4 $52

Must be preceded by Chem. 112, and Biol. 101, or PLSC 140 or 142 or Pharm. 362, except for juniors in Civil Engineering.

General Bacteriology: methods of detection, isolation, and identification.

511. MEDICAL MICROBIOLOGY. Class 2, Lab. 4, cr. 4 $52

Must be preceded by Bact. 212.

Study of the microorganisms associated with infectious diseases and consideration of the principles of immunology and serology.

PLANT SCIENCES

140. INTRODUCTION TO PLANT LIFE. Class 3, Lab. 3, cr. 4 $58

Fundamental principles of the structure, function and relationships of plants.

ZOOLOGY

160. BIOLOGY OF ANIMALS. Class 3, Lab. 3, cr. 4 $58

Basic biological principles of animals.

161. GENERAL ZOOLOGY. Class 2, Lab. 4, cr. 4 $51

Basic course in zoology for premedical students, those majoring in zoology, and others expecting to take Zool. 162.

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* May be offered as a two-credit recitation course with special approval.

162. COMPARATIVE ANATOMY OF VERTEBRATES. Class 2, Lab. 6, cr. 4 $64

Must be preceded by Zool. 161 or equivalent.

Comparison of the structure of vertebrate animals; dissection of examples of the principal types.

260. ANATOMY. Class 2, Lab. 3, cr. 3 $46

Must be preceded by Biol. 101-102 or equivalent.

Lectures on anatomy as applied to the human body, with special emphasis on bones and muscles. Dissection of the cat and study of prepared skeletons.

262. ANATOMY AND PHYSIOLOGY. Class 2, Lab. 2, cr. 3 $36

(Offered only by the Division of Technical Extension.)

Lectures, recitations and laboratory work in basic anatomy and physiology.

263. ANATOMY AND PHYSIOLOGY. Class 2, Lab. 2, cr. 3 $36

(Offered only by The Division of Technical Extension.)

Continuation of Zool. 262.

360. PHYSIOLOGY: Brief Course. Class 3, cr. 3 $36

Must be preceded by Biol. 101-102 or equivalent.

Lectures, demonstrations and textbook work upon the fundamental principles of the anatomy, physiology and hygiene of the human body.

370. PHYSIOLOGY. Class 3, cr. 3 $36

Must be preceded by Biol. 101-102 or Zool. 160.

Physiology of tissues in general, muscle, nerve, brain and sense organs.

371. PHYSIOLOGY. Class 3, cr. 3 $36

Must be preceded by Biol. 101-102 or Zool. 160.

Physiology of circulation, respiration, digestion, excretion and endocrine glands.

CHEMISTRY

Professor McBee in charge

Students expecting to major in chemistry or physics, and all engineering students, will take Chemistry 115 and 116, provided their preparation is adequate. Those with superior preparation may take Chemistry 117, followed by 118 or 126. Students with inadequate preparation will take Chemistry 100, 103, and 116.

100. ELEMENTARY CHEMISTRY. Class 3, cr. 3 $36

Does not carry credit toward graduation in the Schools of Engineering, and does not serve as a prerequisite to Chem. 108, 110, or 112.

103. ELEMENTARY CHEMISTRY. Class 3, Lab. 3, cr. 4 $58

A continuation of Chemistry 100. Chemistry 100 and 103 cover the content of Chemistry 115; these courses should be followed by Chemistry 116.

109. GENERAL CHEMISTRY. Class 3, Lab. 3, cr. 4 $58

Required of all freshmen in the pre-pharmacy option of the School of Science, Education, and Humanities.

110. GENERAL CHEMISTRY WITH QUALITATIVE ANALYSIS. Class 2, Lab. 6, cr. 4 $62

Continuation of Chemistry 109 with laboratory work in qualitative analysis.

111. GENERAL CHEMISTRY. Class 2, Lab. 3, cr. 3 $46

Required of all freshmen registered in the School of Agriculture, or in biology options of the School of Science, Education, and Humanities who are not in Chem. 115 or 117.

112. GENERAL CHEMISTRY. Class 2, Lab. 3, cr. 3 $46

Continuation of Chem. 111.

115. GENERAL CHEMISTRY. Class 3, Lab. 3, cr. 4 $58

Required for students majoring in chemistry and physics, and all engineering students. Students with superior preparation will take Chem. 117, and students with inadequate preparation will substitute Chem. 100 and 103 for Chem. 115. Certain students whose work is unsatisfactory in Chem. 115 may be given credit, with an appropriate grade, for Chem. 100 and assigned to Chem. 103 the following semester.

Laws and principles of chemistry, with special emphasis on topics of importance in engineering. Numerical problems and relationships are introduced whenever quantitative treatment is possible.

116. GENERAL CHEMISTRY. Class 3, Lab. 3, cr. 4 $58

A continuation of Chem. 115.

226. QUALITATIVE ANALYSIS. Class 2, Lab. 6, cr. 4 $64

Must be preceded by Chem. 116 or 118.

Semimicro qualitative analysis for cations and anions.

227. INTRODUCTORY QUANTITATIVE ANALYSIS. Class 2, Lab. 6, cr. 4 $64

Must be preceded by Chem. 126 or 226.

Introduction to quantitative methods.

551. ORGANIC CHEMISTRY. Class 3, Lab. 5, cr. 4 $78

Must be preceded by Chem. 126, 223, or 226.

An elementary course covering aliphatic and alicylic compounds including about twenty laboratory experiments.

552. ORGANIC CHEMISTRY. Class 3, Lab. 5, cr. 4 $78

Continuation of Chem. 551 covering aromatic compounds and special subjects.

ECONOMICS

Professor Weiler in charge

210. *PRINCIPLES OF ECONOMICS. Class 3, cr. 3 $36

Credit will not be given for both Econ. 210 and 211.

Study of the basic economic institutions, such as business, labor organizations, banks, and government. Analysis of the effects of competition, monopoly, and government on allocation of resources in production and consumption; factors affecting size and growth of national income.

211. *PRINCIPLES OF ECONOMICS. Class 3, cr. 3 $36

Credit will not be given for both Econ. 210 and 211.

212. PRINCIPLES OF ECONOMICS. Class 3, cr. 3 $36

Continuation of Econ. 210 or 211. Emphasis on more thorough understanding of basic principles, and their application to solving economic problems.

370. ELEMENTS OF ACCOUNTING I. Class 3, cr. 3 $36

Management uses of accounting; analysis and recording of business transactions; procedure for internal control; preparation and interpretation of comparative financial statements.

371. ELEMENTS OF ACCOUNTING II. Class 3, cr. 3 $36

Must be preceded by Econ. 370.

Continuation of accounting principles; special problems involving partnerships; accounting for corporation capital stock, surplus, cash stock dividends; bonds payable; manufacturing accounting, including a limited approach to cost methods, records, and statements; voucher system; installment sales; retail method of inventory; budgeting and executive control.

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* Econ. 210 and Econ. 211-212 cover the same ground in general, but differ in detail to meet the needs of the several schools. Students will receive credit only in the course required by their respective schools.

382. ECONOMIC GEOGRAPHY. Class 3, cr. 3 $36

Geographic factors determining production and industry in the principal regions of the world.

450. LABOR PROBLEMS. Class 3, cr. 3 $36

Must be preceded by Econ. 210, 211 or 310.

A beginning course in labor relations and industrial relations with emphasis on the broad social aspects of employer-employee problems.

470. LEGAL BACKGROUND FOR BUSINESS. Class 3, cr. 3 $36

Must be preceded by Econ. 210, 211 or 310.

Introduction to American business law, covering persons, torts, contracts, and agency.

553. LABOR LAW. Class 3, cr. 3 $45

Prerequisite: Econ. 450 or consent of instructor.

Court decisions in respect to labor.

EDUCATION

Professor Cooper in charge

260. *PRINCIPLES AND OBJECTIVES OF TRADE AND INDUSTRIAL EDUCATION. Class 3, cr. 3 $36

Historical and legislative background for the development of trade and industrial education, objectives for operating the various types of schools and programs.

460. *†SPECIAL METHODS OF TEACHING TRADE AND INDUSTRIAL SUBJECTS. Class 3, cr. 3 $36

Must be preceded by Psy. 120, 230, and Educ. 300, 304.

Principles and procedures for teaching trade and industrial subjects.

467. *SCHOOL SHOP MANAGEMENT. Class 3, cr. 3 $36

The school shop and drawing room, including equipment and management. Layout selection and arrangement of equipment and supplies; methods of organization and management.

468. *OCCUPATIONAL AND TRADE ANALYSIS. Class 3, cr. 3 $36

Methods of analysis of trade and occupation to determine essential content for courses of study.

469. *ORGANIZATION OF INSTRUCTION MATERIAL FOR TRADES AND INDUSTRIES. Class 3, cr. 3 $36

Must be preceded by Psy. 120 and 230, and Educ. 300, 304, and 468.

Application of governing principles to establish an effective arrangement for teaching content required for occupational courses in vocational schools and classes.

474. *CONFERENCE LEADERSHIP TRAINING. cr. 2 or 3 $24 or $36

Training by the conference method, making use of devices, techniques, and material necessary to the work of the conference leader.

500. AUDIO-VISUAL AIDS FOR TEACHERS. cr. 2 or 3 $30 or $45

Must be preceded by twelve hours of education and psychology.

Sources, selection and effective use of audio-visual aids and preparation of audio-visual materials.

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* Offered also as a field service course.

† The minimum requirements in this course are prescribed by the State Board of Education for regular high school licenses and for vocational licenses. Six hours of directed observation and 12 hours of directed teaching are required for each semester hour of credit.

504. INTRODUCTION TO MEASUREMENT AND EVALUATION.
Class 3, cr. 3 $45

Introduction course in the theory and practice of measurement, with illustrations from education, industry, and business; emphasis on the guidance functions of the measuring devices studied.

510. PRINCIPLES AND PROBLEMS OF VOCATIONAL AND EDUCATIONAL GUIDANCE. Class 3, cr. 3 $45

Must be preceded by twelve hours of psychology and education or equivalent professional training.

The development of vocational and educational guidance in the home, school, industry, and service organizations; consideration of the principles and present practices in such guidance.

514. THE USE OF COMMUNITY RESOURCES IN GUIDANCE.
Class 3, cr. 3 $45

Analysis and utilization of available community resources that have a bearing upon the development and activities of young people.

526. REMEDIAL READING. cr. 2 to 4 $15 per credit hour

Must be preceded by twelve hours in education and psychology.

Techniques in remedial reading for children, adolescents, and adults.

560. CURRICULUM DEVELOPMENT IN INDUSTRIAL ARTS.
cr. 2 or 3 $30 or $45

564. *TESTS AND MEASUREMENTS IN INDUSTRIAL EDUCATION.
Class 3, cr. 3 $45

Must be preceded by Psy. 500 or equivalent.

Designed for industrial education students as an alternative course for Educ. 504. Concepts involved in testing and measuring, with applications in industry and industrial education.

568. *INSTRUCTION MATERIALS FOR TRADES AND INDUSTRIES.
cr. 1 to 6 $15 per credit hour

Must be preceded by Psy. 120, 230, and Educ. 300, 304, 460, and 468, or by permission of instructors. (Not more than 3 hours may be accepted toward an advanced degree.)

Application of governing principles to establish an effective arrangement of teaching content required for occupational courses in vocational schools and classes.

572. PART-TIME AND EVENING-SCHOOL PROGRAMS IN INDUSTRIAL EDUCATION. cr. 1 to 3 $15 per credit hour

Senior standing or by special permission of instructor.

Problems faced by coordinators, supervisors, and administrators in operating part-time and evening schools, with special emphasis on public relations, teacher selection, in-service training, buildings and equipment.

574. PRINCIPLES AND PRACTICE OF TRAINING IN INDUSTRY.
Class 3, cr. 3 $45

Senior standing or by special permission of instructor.

Analysis of training needs; organization of training programs; typical training departments; basic principles of development; relationship of training department to other departments of the industrial plant.

590. INDIVIDUAL RESEARCH PROBLEMS. cr. 1 to 6 $15 per credit hour

Must be preceded by six hours of psychology and six hours of education or equivalent professional training.

Opportunities for students to study particular problems under the guidance of a member of the staff. This plan of individualized instruction may be used in any field of education or vocational education. Does not include thesis work.

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* Offered also as a field service course.

600. HISTORY AND PHILOSOPHY OF EDUCATION. Class 3, cr. 3 $45

608. SEMINAR IN GENERAL EDUCATION. cr. 2 to 4 $15 per credit hour

612. ORGANIZATION AND ADMINISTRATION OF GUIDANCE. Class 3, cr. 3 $45

620. SECONDARY SCHOOL CURRICULUM. cr. 2 or 3 $30 or $45

637. ORGANIZATION AND ADMINISTRATION OF VOCATIONAL EDUCATION. cr. 1 to 4 $15 per credit hour

639. CLINIC FOR EDUCATIONAL LEADERS. cr. 1 to 6 $15 per credit hour

658. SEMINAR IN HOME ECONOMICS EDUCATION. cr. 2 to 6 $15 per credit hour

668. SEMINAR IN VOCATIONAL TRADE AND INDUSTRIAL EDUCATION. cr. 2 to 4. $15 per credit hour

696. RESEARCH IN TRADES AND INDUSTRIES. cr. 1 to 6 $15 per credit hour

ENGLISH

Professor Mills in charge

1. ENGLISH COMPOSITION. Class 3, cr. 0 $36

For students who fail to pass the orientation examination in English.

Prepares students for English 101 through directed practice in writing and a review of fundamentals of grammar, spelling, and punctuation.

Students who receive a grade equivalent to a C or better, will be given credit for English 101.

101. ENGLISH COMPOSITION. Class 3, cr. 3 $36

Prerequisite to all courses in English except Engl. 1, 2, 3, 103 and 185.

Purpose: to develop competence in written expression through directed practice in writing. Background aids are assignments in organization, paragraph development, sentence effectiveness, grammar, punctuation, spelling, diction and usage, critical reading and use of the library.

103. ENGLISH COMPOSITION. Class 3, cr. 3 $36

A composition course for freshmen provisionally excused from English 101 on the basis of orientation tests. The course attempts to develop writing on a high critical level, improve reading tastes, and arouse an interest in the humanities and conflicting intellectual attitudes.

Students who receive grade C or better will be excused from Engl. 202 and given credit for Engl. 101; those who receive grade D must take Engl. 101 or 202, depending upon recommendation of the Engl. 103 instructor; those who fail to pass Engl. 103 must take both Engl. 101 and 202.

185. DEVELOPMENTAL READING. Lab. 2, cr. ⅔ $30

Purpose: to increase reading efficiency by improving comprehension and by developing the motor skills involved in reading speed. Motivates reading interest through use of films, slides, and accelerators.

202. ENGLISH COMPOSITION. Class 3, cr. 3 $36

A second course in English composition, supplementary to the training offered in the prerequisite course, Engl. 101.

A student who has received a grade of A or B in Engl. 101 may, with the approval of the head of the Department of English, substitute for Engl. 202 an advanced course in English.

230. INTRODUCTION TO LITERATURE. Class 3, cr. 3 $36

Not open to students with credit for Engl. 238.

Reading and discussion of major works in English, American and continental literature to develop an understanding of style, form, and ideas characteristic of great works. Emphasis on types of narrative literature.

With Engl. 231, satisfies literature requirement of School of Science, Education, and Humanities.

231. INTRODUCTION TO LITERATURE. Class 3, cr. 3 $36

Reading and discussion of major works in English, American, and continental literature to develop an understanding of style, form, and ideas characteristic of great works. Emphasis on various types of literature.

235. INTRODUCTION TO THE DRAMA. Class 3, cr. 3 $36

Drama as literature and as theatre art. Forms, techniques, and subject matter of the drama as illustrated by about twenty-five plays, most of them modern.

238. INTRODUCTION TO FICTION. Class 3, cr. 3 $36

Not open to students with credit for Engl. 230.

Reading and discussion of selected short stories and seven novels, to promote awareness, understanding, and appreciation of the range, values, techniques, and meanings of reputable modern fiction.

240. INTRODUCTION TO THE LITERATURE OF ENGLAND: CHAUCER TO POPE. Class 3, cr. 3 $36

Offering fairly extensive acquaintance with a few major writers, this course aims at both competence in literary analysis and awareness of the relation between each writer and his times.

Required of all students majoring in Literature.

250. GREAT AMERICAN BOOKS. Class 3, cr. 3 $36

Seven books, such as *The Scarlet Letter, Moby Dick,* and *Walden,* read and discussed as to their literary qualities and their cultural significance.

310. NEWSWRITING. Class 3, cr. 3 $36

News stories of different types are written. Acquaintance is made with some of the more notable current American newspapers.

Required of all students majoring in Journalism.

405. CREATIVE WRITING. Class 3, cr. 3 $36

Informally conducted for students who enjoy writing—of any kind except the narrowly technical—and concerned with problems of form, style, diction, sentence structure. Workshop criticism. May be repeated for credit.

420. BUSINESS WRITING: GENERAL APPLICATIONS. Class 3, cr. 3 $36

Application of business writing principles to the preparation of common letter types, reports, and advertising copy. Sales adjustment, collection, and employment letters are stressed.

555. MAIN CURRENTS OF AMERICAN THOUGHT. Class 3, cr. 3 $45

A survey of dominant ideas and intellectual trends in America from 1607 to the present as revealed through American literature and as related to American life and culture.

576. MODERN DRAMA: THE PLAYS OF IBSEN AND BERNARD SHAW. Class 3, cr. 3 $45

A course dealing with the two greatest dramatists of the past century. Plays of Ibsen and Shaw are examined thoroughly for both ideas and technique.

577. MODERN ENGLISH AND AMERICAN POETRY. Class 3, cr. 3 $45

Surveys modern poetry from Hardy to Auden; relates it to the main currents of contemporary thought and feeling; introduces elementary critical principles.

A clinician administers an aptitude test.

A pacer forces students to read faster than their normal rate in reading improvement courses.

HISTORY, GOVERNMENT, AND PHILOSOPHY

Professor Ogle in charge

HISTORY

204. AMERICAN HISTORY TO 1865. Class 3, cr. 3 $36

A study of the development of American political, economic, and social institutions from the early explorations and colonial settlements to the conclusion of the Civil War.

205. THE UNITED STATES AND ITS PLACE IN WORLD AFFAIRS. Class 3, cr. 3 $36

A study of the growth of the United States from the period of the Reconstruction to the present. The new industrialism, agrarian problems, territorial expansion, the two World Wars, depression, the New Deal, and similar topics are analyzed.

210. HISTORY OF EUROPE SINCE 1914. Class 3, cr. 3 $36

A survey of the causes, campaigns, and diplomacy of World War I; post war adjustments and the inter-war period; the causes, campaigns, and diplomacy of World War II and a survey of each of the major countries since 1945.

405. EUROPE IN THE 16th, 17th AND 18th CENTURIES. Class 3, cr. 3 $36

This course treats the emergence of the institutions and concepts of modern Europe during the period from the 15th to the 19th century. Particular attention is given to the Renaissance, the Reformation, economic and social change, and political concepts culminating in the French Revolution and Napoleon.

410. EUROPEAN HISTORY, 1815-1914. Class 3, cr. 3 $36

The major topics of study examined in this course are the developments in European nationalism culminating in the unification of Germany and Italy, political liberalism particularly as achieved by the Third French Republic, socialism both utopian and scientific which emerged in the Revolution of 1848, and the growth and expansion of Europe under the industrial revolution.

GOVERNMENT

101. INTRODUCTION TO GOVERNMENT. Class 3, cr. 3 $36

The problems of government as illustrated by American national government. Attention to political theory as well as to the organization and problems of government.

102. INTRODUCTION TO GOVERNMENT. Class 3, cr. 3 $36

Must be preceded by Govt. 101.

State and local government: powers, relationships and problems of administration with emphasis on the middle western states.

301. ELEMENTS OF DEMOCRACY. Class 3, cr. 3 $36

Not open to students who have had Govt. 101.

Fundamental problems all governments must face, and how they are met in a democracy as contrasted with other types of society.

331. INTERNATIONAL RELATIONS. Class 3, cr. 3 $36

Introductory survey of the underlying forces in international relations, the foreign policies of the great powers, and agencies of control and cooperation.

532. CONTEMPORARY INTERNATIONAL PROBLEMS. Class 3, cr. 3 $45

Current international issues and developments in international cooperation and world order.

PHILOSOPHY

310. INTRODUCTION TO PHILOSOPHY. Class 3, cr. 3 $36

The basic problems and types of philosophy with special emphasis upon the problem of knowledge and nature of reality.

May be applied toward meeting the philosophy requirement of the School of Science, Education, and Humanities.

MATHEMATICS

Professor Kossack in charge

Students expecting to major in mathematics, physics, or chemistry, and all engineering students, will take Math. 161, 162, 261, and 262. If their preparation is inadequate for this series of courses, they will take Math. 151, 152, 162, 261, and 262.

1. HIGH SCHOOL ALGEBRA. Class 5, cr. 0 $60

Credit, one unit for admission.

2. PLANE GEOMETRY. Class 5. cr. 0 $60

Credit, one unit for admission.

4. ADVANCED HIGH SCHOOL ALGEBRA. Class 2, cr. 0 $24

Credit, one-half unit for admission.

For engineering students with an entrance deficiency in this subject.

111. ALGEBRA. Class 3, cr. 3 $36

112. TRIGONOMETRY. Class 3, cr. 3 $36

Should be preceded by Math. 111.

115. ALGEBRA. Class 4, cr. 4 $48

(Offered only by the Division of Technical Extension.)

116. ANALYTIC GEOMETRY. Class 4, cr. 4 $48

(Offered only by the Division of Technical Extension.)

Plane and solid analytic geometry.

121. GENERAL COLLEGE MATHEMATICS I. Class 3, cr. 3 $36

With Math. 122 satisfies the core requirements for Mathematics for the B.S. degree in the School of Science, Education, and Humanities.

122. GENERAL COLLEGE MATHEMATICS II. Class 3, cr. 3 $36

Continuation of Math. 121.

151. ELEMENTARY MATHEMATICS FOR ENGINEERS AND SCIENTISTS I.
Class 5, cr. 5, or Class 4, Lab. 2, cr. 5 $60

For students with inadequate preparation for Math. 161.

Math. 151 and 152 cover in two semesters the material of Math. 161 with more drill work and review of algebraic background.

Does not carry credit toward graduation in the Schools of Engineering.

152. ELEMENTARY MATHEMATICS FOR ENGINEERS AND SCIENTISTS II.
Class 5, cr. 5, or Class 4, Lab. 2, cr. 5 $60

Continuation of Math. 151.

161. MATHEMATICS FOR ENGINEERS AND SCIENTISTS I.
Class 5, cr. 5, or Class 4, Lab. 2, cr. 5 $60

Required for students majoring in mathematics, physics, and chemistry, and all engineering students. Students with inadequate preparation will substitute Math. 151 and 152 for Math. 161. Certain students whose work is unsatisfactory in Math. 161 may be given credit, with appropriate grade, for Math. 151, and assigned to Math. 152 the following semester.

Introductory course preparing for Calculus.

162. MATHEMATICS FOR ENGINEERS AND SCIENTISTS II. Class 5, cr. 5 $60
Must be preceded by Math. 152 or 161.
Analytical Geometry and Calculus.
(To be offered for the first time in the second semester 1956-57.)

242. CALCULUS II. Class 4, cr. 4 $48
Must be preceded by Math. 241.

261. MATHEMATICS FOR ENGINEERS AND SCIENTISTS III. Class 4, cr. 4 $48
Must be preceded by Math. 162.
Analytic Geometry and Calculus.
(To be offered for the first time during the summer 1957.)

262. MATHEMATICS FOR ENGINEERS AND SCIENTISTS IV. Class 4, cr. 4 $48
Must be preceded by Math. 261.
Topics in Calculus and Differential Equations.
(To be offered for the first time during the first semester 1957-58.)

351. ELEMENTARY STATISTICS. Class 3, cr. 3 $36
Must be preceded by Math. 111 and 112 or 121 and 122 or equivalent.

An introductory and preparatory course for both mathematical and applied statistics. Emphasis on underlying concepts and logic of statistical methods as well as on computational techniques.

352. ELEMENTARY STATISTICS. Class 3, cr. 3 $36
Continuation of Math. 351.

413. MATHEMATICS OF FINANCE. Class 3, cr. 3 $36
Simple and compound interest; applications to annuities, sinking funds, amortization, depreciation, bonds; elementary mathematical theory of life annuities and life insurance.

421. DIFFERENTIAL EQUATIONS AND APPLICATIONS. Class 3, cr. 3 $36
Must be preceded by Math. 242.

Derivations and solutions of differential equations for problems in physics, chemistry, and engineering.

501. HIGHER ALGEBRA. Class 3, cr. 3 $45
Must be preceded by Math. 242, or 262.

Theories of integers, rational numbers, real numbers, complex numbers and polynomials, and their generalizations in modern algebra.

502. ELEMENTS OF MATRICES. Class 3, cr. 3 $45
Must be preceded by Math. 242 or 262.

Determinants, polynomials and forms, matrices, transformations, systems of linear equations.

521. ADVANCED ENGINEERING MATHEMATICS I. Class 3, cr. 3 $45
Must be preceded by Math. 421.
(Students cannot use both Math. 520 and 521 in any graduate program.)

Power series, Fourier series; hyperbolic, gamma and Bessel functions; linear partial differential equations. Emphasis on applications.

522. ADVANCED ENGINEERING MATHEMATICS II. Class 3, cr. 3 $45
Must be preceded by Math. 421.

Laplace transforms, functions of a complex variable, line and surface integrals, vector analysis.

523. VECTOR ANALYSIS. Class 3, cr. 3 $45
Must be preceded by Math. 242.

Vector algebra, vector calculus; integral theorems of Gauss, Green, and Stokes; applications.

525. APPLIED THEORY OF COMPLEX FUNCTIONS. Class 3, cr. 3 $45
Must be preceded by Math. 521 or 522 or 531.

Primarily for students in applied science.

Fundamental operations on complex numbers and functions, power series, contour integration, conformal mapping. Applications to two-dimensional flow and potential theory.

541. ADVANCED CALCULUS I. Class 3, cr. 3 $45
Must be preceded by Math. 242 or 262.

Critical review of fundamental notions of calculus; differential calculus of functions of several variables; implicit function theorems.

542. ADVANCED CALCULUS II. Class 3, cr. 3 $45
Must be preceded by Math. 541 or 531.

Vectors and vector fields; integral calculus of functions of several variables; line and surface integrals; Green's and Stokes' theorems; infinite series; uniform convergence.

557. APPLICATIONS OF STATISTICS IN QUALITY CONTROL.
Class 3, cr. 3 $45
Must be preceded by Stat. 501.

To give a strong background in control charts and acceptance sampling, including sequential analysis, theory of runs, significance tests and some analysis of variance and statistics of combinations.

558. APPLIED STATISTICS IN ENGINEERING RESEARCH.
Class 3, cr. 3 $45
Must be preceded by Stat. 501.

Significance tests and estimation, a strong background in analysis variance, multiple regression and correlation, some analysis of covariance, moments and frequency functions.

STATISTICS

501. STATISTICAL METHODS. Class 2, Lab. 2, cr. 3 or Class 3, cr. 3 $45
Not open to freshmen and sophomores.

Descriptive statistics for one and two variables of measurement; curve fitting, regression and correlation; statistical inference through the simpler significance tests and estimation procedures.

A section of this course has been developed as the introductory course in applied statistics for engineers. This section will have no laboratory period, and will include some work in statistical quality control.

MODERN LANGUAGES

Professor Hocking in charge

FRENCH

101. FIRST COURSE IN FRENCH. Class 2, Lab. 2, cr. 3 $36
For beginners only.

Unless recommended by the head of the school in which the student is registered, a student may not apply toward graduation the credit for French 101 without satisfactorily completing a more advanced course in French.

102. SECOND COURSE IN FRENCH. Class 2, Lab. 2, cr. 3 $36
Must be preceded by French 101 or equivalent.

Continuation of French 101.

GERMAN

101. FIRST COURSE IN GERMAN. Class 2, Lab. 2, cr. 3 $36
For beginners only.

Unless recommended by the head of the school in which the student is registered, a student may not apply toward graduation the credit for German 101 without satisfactorily completing a more advanced course in German.

102. SECOND COURSE IN GERMAN. Class 2, Lab. 2, cr. 3 $36
Must be preceded by German 101 or equivalent.

Continuation of German 101.

203. THIRD COURSE IN GERMAN. Class 3, cr. 3 $36
Must be preceded by German 102 or equivalent.

Readings from the works of nineteenth century and contemporary German writers; practice in speaking and writing German.

244. FOURTH COURSE IN SCIENTIFIC GERMAN. Class 3, cr. 3 $36
Must be preceded by German 203 or equivalent.

Continuation of German 243.

RUSSIAN

101. FIRST COURSE IN STANDARD RUSSIAN. Class 2, Lab. 2, cr. 3 $36
For beginners only.

Unless recommended by the head of the school in which the student is registered, student may not apply toward graduation the credit for German 151 without satisfactorily completing a more advanced course in Russian.

102. SECOND COURSE IN STANDARD RUSSIAN. Class 2, Lab. 2, cr. 3 $36
Must be preceded by Russian 101 or equivalent.

Continuation of Russian 101.

SPANISH

101. FIRST COURSE IN SPANISH. Class 2, Lab. 2, cr. 3 $36
For beginners only.

Unless recommended by the head of the school in which the student is registered, a student may not apply toward graduation the credit for Spanish 101 without satisfactorily completing a more advanced course in Spanish.

102. SECOND COURSE IN SPANISH. Class 2, Lab. 2, cr. 3 $36
Must be preceded by Spanish 101 or equivalent.

PHYSICAL EDUCATION FOR MEN

Professor Mackey in charge

100. PERSONAL LIVING. Class 1, cr. ⅔ $12
101. PHYSICAL EDUCATION ORIENTATION. Class 1, cr. 1 $12
102. HISTORY OF PHYSICAL EDUCATION. Class 1, cr. 1 $12
103. PHYSICAL EDUCATION CURRICULAR ACTIVITIES. Class 1, Lab. 4, cr. 3 $36

Theory and skill techniques in gymnastics, soccer, tennis, handball and squash.

104. PHYSICAL EDUCATION CURRICULAR ACTIVITIES. Class 1, Lab. 4, cr. 3 $36

Theory and skill techniques in apparatus, tumbling, golf, volleyball and badminton.

112. PHYSICAL ACTIVITIES. Lab. 3, cr. 1 $18

161. SQUARE DANCING AND SOCIAL GAMES. Lab. 3, cr. 1 $18

203. PRINCIPLES OF INTRAMURAL ATHLETIC ACTIVITIES. Class 3, cr. 3 $36

204. PHYSICAL EDUCATION RHYTHMIC ACTIVITIES. Class 3, cr. 3 $36

Theory and skill techniques in group games, dancing, and other social activities.

380. FIRST AID AND SAFETY. Class 1, Lab. 2, cr. 2 $27

For 3 credits see P.E.W. 380 in general catalog.

504. ORGANIZATION AND ADMINISTRATION OF THE SCHOOL HEALTH PROGRAM. Class 3, cr. 3 $45

Emphasis upon the education aspects of the school health program and the personnel relationships involved in home, school, and community.

RECREATION

502. ORGANIZATION OF CHORAL AND ORCHESTRAL MUSIC. Class 3, cr. 3 $45

The organization, direction, and maintenance of choral and instrumental recreation, with special emphasis on non-technical approach which will make music attractive to industrial employees and an employee activity.

PHYSICAL EDUCATION FOR WOMEN

Professor Hazelton in charge

100. PHYSICAL EDUCATION. Lab. 2, cr. 1 $12

A wide range of activities at varying levels of ability designed to develop recreational skills and interests and to contribute to the maintenance of physical well-being.

PHYSICS

Professor Lark-Horovitz in charge

100. OUTLINE OF PHYSICS FOR NURSES. Class 4, Lab. 3, cr. 5 $69

Offered at the Indianapolis Extension Center.

General physics with emphasis on applications to medicine.

152. MECHANICS. Class 3, Lect. Dem. 1, Lab. 2, cr. 4 $57

Must be preceded or accompanied by Math. 162.

Statics; uniform and accelerated motion; Newton's laws; circular motion; energy, momentum, and conservation principles; dynamics of rotation; gravitation and planetary motion; elasticity; simple harmonic motion; hydrostatics; hydrodynamics; intermolecular forces.

201. GENERAL PHYSICS. Class 2, Lab. 3, cr. 3 $45

(Offered only by the Division of Technical Extension.)

Must be preceded by or taken concurrently with Math. 111, 112 or equivalent.

General physics with emphasis on fields allied to medicine.

202. GENERAL PHYSICS. Class 2, Lab. 3, cr. 3 $45

(Offered only by the Division of Technical Extension.)

Continuation of Physics 201.

220. GENERAL PHYSICS. Class 3, Lab. 3, cr. 4 $57

Must be preceded by Math. 111-112, or 121-122, or 101.

Mechanics, heat, and sound, for students not specializing in physics.

221. GENERAL PHYSICS. Class 3, Lab. 3, cr. 4 $57

Must be preceded by Phys. 220.

Electricity, light, and modern physics, for students not specializing in physics.

231. GENERAL PHYSICS. Class 4, Lect. Dem. 1, cr. 4⅓ $56
Must be preceded by Phys. 230
Electricity, sound, light.
(To be offered for the last time during the first semester 1957-58.)

241. GENERAL PHYSICS. Class 4, Lect. Dem. 1, Lab. 2, cr. 5 $69
Must be preceded by Phys. 240.
Electricity, sound, light, with illustrative laboratory experiments.
(To be offered for the last time during the first semester 1957-58.)

251. HEAT, SOUND, AND ELECTRICITY. Class 5, Lab. 2, cr. 5 $69
Must be preceded by Physics 152.
Heat, kinetic theory, elementary thermodynamics, heat transfer. Sound. Electrostatics, current electricity, electrochemistry, electromagnetism, magnetic properties of matter, transient and alternating currents; thermionics.

262. OPTICS AND MODERN PHYSICS. Class 5, Lab. 2, cr. 5 $69
Must be preceded by Physics 251 or 261.
Radiations, the electromagnetic spectrum, geometrical and physical topics. Modern physics, relativity; quantum concepts, atomic and molecular spectra and structures; physics of the solid state; nuclear physics.

520. ACOUSTICS. Class 3, cr. 3 $45
Must be preceded by Math. 241 and 242 and by two terms of general physics.
Introduction to the acoustics of reproduction and communication systems; architectural acoustics; sound production and reception.

530. ELECTRICITY AND MAGNETISM. Class 3, cr. 3 $45
Must be preceded by Phys. 330 or E.E. 315, 316 or equivalent.
An introductory theoretical course. Vector analysis; electrostatic problems; theory of dielectrics; theory of conduction; thermoelectric and photoelectric phenomena; electromagnetic effects due to steady and changing currents; magnetic properties of matter; Maxwell's equations; radiation.

550. INTRODUCTION TO MODERN PHYSICS. Class 3, cr. 3 $45
Must be preceded by Phys. 240, 241 and calculus.
Not available for graduate credit for physics majors.
A historical survey of modern physics up to 1927. Kinetic theory; the electron; ions; isotopes; quantum theory of radiation; photons; Bohr theory of the atom; the spectrum of hydrogen; X-ray spectra; shell structure of the atom, and interpretation of the Periodic Table.

556. INTRODUCTION TO MODERN PHYSICS. Class 3, cr. 3 $45
Must be preceded by Phys. 550, or taken by special arrangement.
A continuation of Phys. 550, primarily for graduate students electing a minor in physics.

Theory of relativity, elementary particles, structure of stable nuclei, radioactivity, interaction of nuclear radiation with matter, nuclear reactions, particle accelerators, nuclear instruments, fission, nuclear reactors, cosmic radiation and high energy physics, mesons, hyperons.

PSYCHOLOGY

Professor Asher in charge

120. ELEMENTARY PSYCHOLOGY. Class 3, cr. 3 $36
Introduction to the fundamental principles of psychology, covering particularly the topics of personality, intelligence, emotion, attention perception, learning, memory, and thinking.

223. APPLIED PSYCHOLOGY. Class 3, cr. 3 $36
Must be preceded by Psy. 120 or its equivalent.
A survey of the applications of psychology to problems in education, business, industry, medicine, and law.

230. EDUCATIONAL PSYCHOLOGY. Class 3, cr. 3 $36
Must be preceded by Psy. 120.

Introduction to the problems of the pupil; educational adjustment, with emphasis on the application of psychological principles to teaching.

235. CHILD PSYCHOLOGY. Class 3, cr. 3 $36
Must be preceded by Psy. 120 or its equivalent.

Age-level characteristics and needs of children from birth to the teens in motor control, language, learning, play, etc.; interpersonal relations and other factors affecting children.

340. GENERAL SOCIAL PSYCHOLOGY. Class 3, cr. 3 $36
Must be preceded by six hours of psychology or three hours of psychology and three hours of sociology. G.S. 234 may be included as three hours of sociology. (Same as Soc. 340.)

Conditions and consequences of human behavior in social situations, with emphasis upon the mechanism and the process on the basis of which socialization takes place.

350. ABNORMAL PSYCHOLOGY. Class 3, cr. 3 $36
Must be preceded by twelve hours of psychology.

Various forms of mental disorder from the standpoint of their origin, treatment, prevention, social significance, and relation to problems of normal human adjustment.

500. STATISTICAL METHODS APPLIED TO PSYCHOLOGY, EDUCATION AND SOCIOLOGY. Class 2, Lab. 2, cr. 3 $45
Must be preceded by six hours of education and/or psychology and/or sociology.

Application of elementary statistical concepts, such as central tendency, variability correlation, validity, and reliability, to problems of psychology and mental measurements.

530. ADVANCED EDUCATIONAL PSYCHOLOGY. Class 3, cr. 3 $45
Must be preceded by Psy. 120 and 230.

Principles of learning evaluated in relation to current methods of instruction and to the results from research in education and psychology.

532. PSYCHOLOGY OF THE EXCEPTIONAL CHILD. Class 3, cr. 3 $45
Must be preceded by six semester hours of psychology.

Principles of diagnostic testing, adaptive teaching, and guidance applied to the improvement of teaching and to the correction of learning difficulties of exceptional children.

533. PROBLEMS IN CHILD PSYCHOLOGY. Class 3. cr. 3 $45
Must be preceded by six semester hours of psychology.

Development of the child from birth to adolescence, with special study of such topics as play, sex differences, and learning at different age levels.

534. PSYCHOLOGY OF ADOLESCENCE. Class 3, cr. 3 $45
Must be preceded by six semester hours of psychology.

Development during the teens, with special reference to general life problems facing youth of these ages, and an investigation into ways and means of helping youth to meet its problems constructively.

537. MENTAL HYGIENE IN EDUCATION. Class 3, cr. 3 $45
Must be preceded by Psy. 120 and 230.

General principles of mental and emotional health and how to set up constructive conditions for the years of childhood and youth; the child in relation to parents, teachers, and children.

550. INTRODUCTION TO CLINICAL PSYCHOLOGY. Class 3, cr. 3 $45
Must be preceded by twelve hours of psychology.

The case-study method, including a discussion of the importance of historical information, the contribution of clinical tests to diagnosis, and a general survey of prevention and treatment techniques.

570. INDUSTRIAL PSYCHOLOGY. Class 3, cr. 3 $45

Introduction to psychology through the topics of individual differences, aptitude testing, merit ratings, industrial safety motivation, morale, and training.

574. PSYCHOLOGY OF INDUSTRIAL TRAINING. Class 3, cr. 3 $45

Must be preceded by Psy. 570.

The training of industrial personnel. Consideration of effective methods for training inspectors, apprentices, and supervisors.

576. PSYCHOLOGY OF WORK EFFICIENCY. Class 3, cr. 3 $45

Must be preceded by Psy. 570.

Factors affecting industrial work efficiency, such as fatigue and monotony, hours of work, rest pauses, working conditions, and biomechanics, with particular emphasis on psychological aspects.

578. PSYCHOLOGICAL APPROACHES TO JOB ANALYSIS. Class 3, cr. 3 $45

Must be preceded by Psy. 570.

Techniques of systematic job study primarily for purposes of establishing personnel specifications and deriving training content; emphasis on analysis procedures and the preparation of job descriptions.

SOCIOLOGY

Professor Christensen in charge

100. INTRODUCTORY SOCIOLOGY. Class 3, cr. 3 $36

A survey course designed to introduce the student to the science of human society. Fundamental concepts, description and analysis of society, culture, the socialization process, social institutions, and social change. A first course for sociology majors and a possible terminal course for non-majors.

220. SOCIAL PROBLEMS. Class 3, cr. 3 $36

Must be preceded by Soc. 100 or G.S. 234 or equivalent.

Analysis of problem conditions in modern society—family disorganization, racial conflicts, class struggle, mental illness, narcotic addiction, gambling, alcoholism, and others. Social factors involved in the development, continued existence, and amelioration of these conditions.

330. RURAL SOCIOLOGY. Class 3, cr. 3 $36

The structure and functions of rural society; rural people, groups, institutions, and organizations; current problems in rural society.

350. MARRIAGE AND FAMILY RELATIONSHIPS. Class 3, cr. 3 $36

Designed to provide further understanding of family relationships for those unmarried, those contemplating marriage, those married, and prospective counselors of all of them. A functional approach to the interpersonal relationships of courtship, marriage, and family life. Open to both men and women.

521. JUVENILE DELINQUENCY. Class 3, cr. 3 $45

Must be preceded by Soc. 100 or G.S. 234 or equivalent.

A study of social and psychological factors influencing individual delinquent behavior patterns. Emphasis on preventive and rehabilitative programs and the role of community agencies, such as social service agencies, juvenile courts, youth authorities. Visits to selected organizations and institutions.

553. THE SOCIOLOGY OF THE FAMILY. Class 3, cr. 3 $45

(Offered in 1956-57 and alternate years thereafter.)

Must be preceded by Soc. 100 or G.S. 234 or equivalent.

The family as a social institution, featuring its uniformity and variability in historical time and social space. Family institutions in preliterate, ancient, and modern cultures. Particular emphasis upon the development of the family in western European culture.

555. FAMILY LIFE EDUCATION. cr. 2 to 4 $15 per credit hour
Must be preceded by 15 hours from Education, Family Life, Psychology and Sociology.

Designed especially for teachers and prospective teachers. Discussion of courtship, marriage, and family relationships. Special attention to methods and materials of instruction.

570. SOCIAL BASES OF EDUCATION. Class 3, cr. 3 $45
Must be preceded by Psy. 120 and Soc. 100 or G.S. 234 or equivalent.

Sociological interpretation and evaluation of school and non-school education.

SPEECH

Professor Monroe in charge

111. PUBLIC SPEAKING. Class 2, cr. 2 $24
(Offered only by the Division of Technical Extension.)

112. PUBLIC SPEAKING. Class 2, cr. 2 $24
Continuation of Spch. 111 and must be preceded by it.

Credit in Spch. 111 and 112 combined will be accepted in lieu of Spch. 114 or 116 where one of the latter courses is required for graduation. Credit may not be earned both in Spch. 114 or 116 and in the Spch. 111 and 112 combination.

114. PRINCIPLES OF SPEECH. Class 3, cr. 3 $36

210. DEBATING. Class 1, cr. 1 $12
Admission by consent of instructor only.

211. APPLIED DEBATING. Lab. 2, cr. 1, or Lab. 4, cr. 2 $13 or $25
Admission by consent of instructor only.
May be repeated for credit, maximum total four credits.

325. THE BUSINESS AND PROFESSIONAL INTERVIEW. Class 3, cr. 3 $36
Must be preceded by Spch. 114 or 116.

Study and practice of methods used in business interviews.

Each center offers a variety of courses of general adult interest.

UNIVERSITY STAFF
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* Leave of absence, 1956-57.

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Doctor of Philosophy, Massachusetts Institute of Technology, 1954

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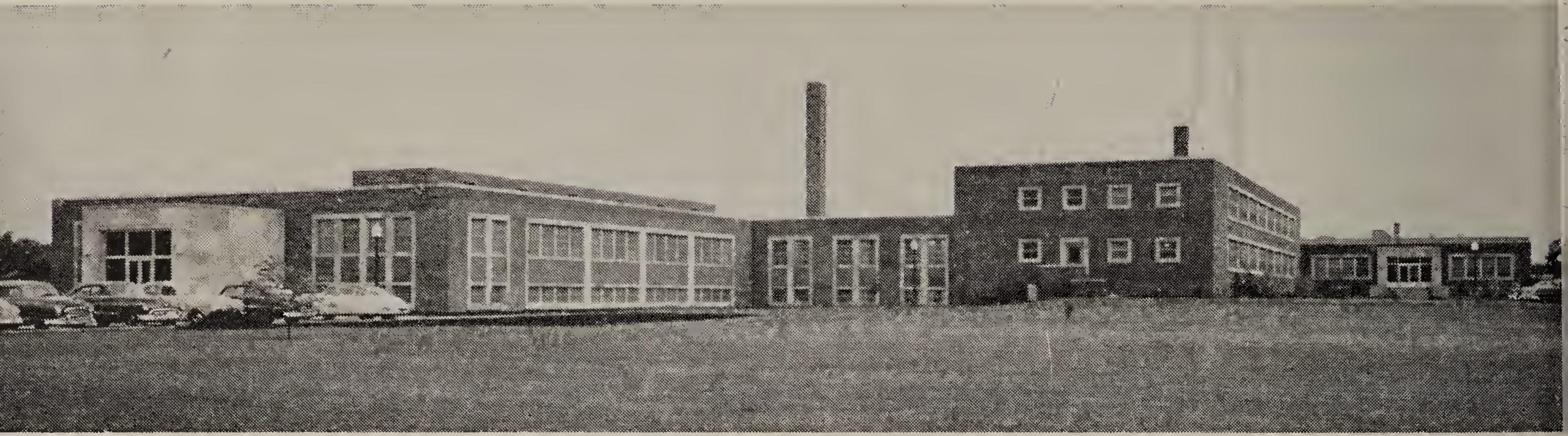

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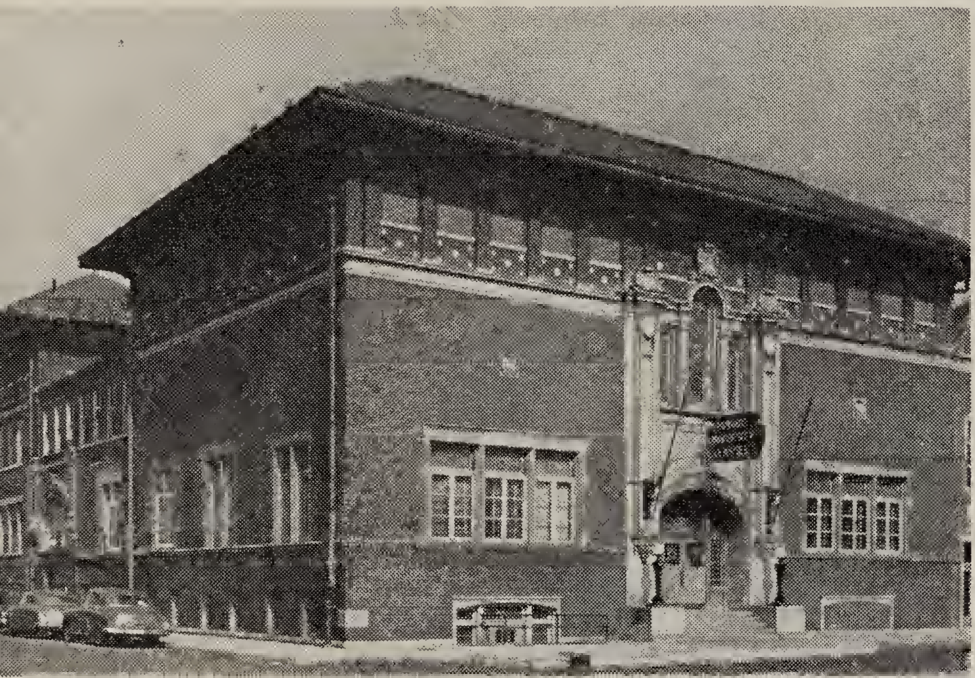

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* Leave of absence, 1956-57.

PURDUE UNIVERSITY

Division of Technical Extension

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